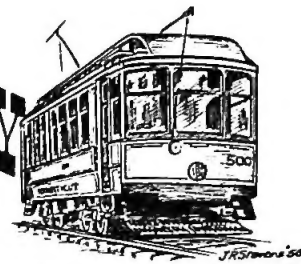


BRANFORD • ELECTRIC • RAILWAY JOURNAL



Museum Acquires Oldest Streetcar

The Shore Line Trolley Museum has added an extremely old and rare piece to its already well-rounded collection. It is, we believe, the oldest preserved streetcar in the world, and it arrived on December 5th, 2014, after a transfer of ownership from the Museum of the City of New York.

This horsecar, numbered 76, holds many mysteries, among which its actual date of construction being a significant one. There was little in the file from MCNY. We do know for certain that MCNY received this car from the Second Avenue Railroad Co. in 1933 and that it had been used for at least 35 years prior as an "elder statesman" car to be rolled out during important ceremonies. This horsecar, like #3 in the museum's collection, was built by John Stephenson Co. However, photos and records of the company from this time period (the 1850s) are long-lost.

In our previous issue, the early development of the horsecar in New York City was presented. The first company, the New York & Harlem, was unchallenged for two decades, until four companies (Second, Third, Sixth and Eighth Avenue Railroads) opened in stages between 1852 and 1853. The typical horsecars at this time were of flat or low-arch roof construction with no clerestory, seated approximately 24 people and weighed about 5,000 pounds empty. They were double-ended with front and rear platform and operated with a driver and conductor, and a team of two horses.

John Stephenson, in an interview with *Street Railway Journal* (Oct 1888, pg. 261) states that circa 1855, he designed for the Third Avenue company a lighter horsecar based on his
continued pg. 9



ABOVE: Car 76 at the museum shortly after arrival. (J. Hakner) LEFT: The car as it appeared in 1897 on a ceremonial trip with New York City Aldermen on board. (coll. Leroy O. King / coll. RR. Museum Penn. #042117) BELOW: Depiction of same event in *Street Railway Review*, Dec. 1897



Grant for Car 2001

The museum gratefully acknowledges a grant of \$2,750 in matching funds received during January 2015 from the **20th Century Electric Railway Foundation**. Museum members responded generously to an online appeal for the required matching funds, which were raised in less than 30 days! In fact, the target amount was exceeded (which is welcome, since there will be additional costs in bringing 2001 back into service.) Thanks to the membership response, and the generosity of the 20th Century Electric Railway Foundation, a set of four brand-new motor pinion gears is currently being fabricated. These are the last major pieces needed to install the overhauled motors, a task which will be undertaken as soon as the pinions arrive in April. We hope by the next issue to report on another "old friend" being back under the live wire again!



The 500 Club

Car 500, the Parlor Car of the Connecticut Company, is seen above inside Building 8, November 2014. It was one of the victims of the Irene flood. By renewing your membership at the \$500 level, or with a donation to the Annual Fund, you will help support the motor repair program which will get Car 500 running again!

The Branford Electric Railway Journal

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www.bera.org/membonly.html

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Museum News (and how it reaches you)

by Nathan Nietering

Where do you go when you want to see what's new at the museum? If you can't make it to East Haven yourself, you probably visit the museum's web site, or wait for the next copy of the newsletter in hand, the Branford Electric Railway Journal. But just how is this news assembled, to reach your mailbox or inbox?

The Journal is our twice-a-year, full color news periodical. The magazine is assembled in large part by Jeff Hakner, who spends hours researching articles, gathering together suitable photographs and other material, and then laying it all out in what is typically a 20 page issue. Other museum members contribute photographs and sometimes articles as well. The draft is proof-read by Nathan Nietering and individual entries are checked by various department heads.

When the final version is ready, the Journals are professionally printed at a local printing house, Minuteman Press in East Haven, who continues to do an excellent job for us. Many thanks go to museum members Jan Maier and Carmela Gaetano for the time they spend helping to label and prepare each issue for mailing. Then Nathan, a former USPS postal employee, uses his extensive knowledge to organize all copies in the correct sequence so the museum can send them via a non-profit bulk rate. This work is all done by volunteers - the only cost is the printing and mailing, and both of these are included with an annual museum membership.

News is also brought to our members electronically, via email alerts, facebook page updates, *Tripper* online newsletters via the members-only web site, and news updates on our public site.

The museum launched a new version of the public web site www.shorelinetrolley.org in late 2013. Nathan Nietering, along with project manager Clayton Emerson and professional web designer Emily Sharp comprise the volunteer web site committee and have developed the web site into an extensive resource. From basic information such as museum hours and special events to a growing page about the museum's collection and regular news updates, the web site is focused on the visitor experience.

A good web site not only makes it easy for potential visitors to learn about the museum, but presents a professional image to the community. When an organization is being considered for grant funding, many times a grantor will examine its web site to determine if they are a viable and responsible entity. The web site also enables members who live far away to be plugged in to their museum, even if they can only visit once a year. Thanks to Emily and Clay for their time and effort in helping the museum build its web presence.

The museum's Facebook page continues to grow as a tool for web outreach and interaction. Thanks to Bobby Ryan for managing it. Look up the museum at
www.facebook.com/shorelinetrolleyuseum

Museum at Amherst Railroad Hobby Show, Grants Received

The Shore Line Trolley Museum was pleased to present a fresh exhibit at the annual Amherst Railway Society Railroad Hobby Show in West Springfield, Mass. in January. Reputed as the largest railroad show on the east coast, it's a great opportunity for organizations such as ours to show off what we've been up to and why people should pay us a visit. Significant enhancements were undertaken for the 2015 show.

The family team of Tom, Helga and Lisa Savage put their heads together to create three professional visual presentations, each of which were shown on its own flat panel TV monitor. With the help of Clay Emerson, Howard McGinn and Nathan Nietering, a thoughtful exhibit plan was put together which included the video presentations, flat-panel "tri-fold" display boards, a few of our BRT trolley models, and of course plenty of new 2015 museum brochures and special event cards. This was accompanied by the operating model trolley layout, a regular feature at our exhibit, assembled each year by Bill Wall. A special exhibit was also put together to showcase the museum's recent grant awards, and to thank those grantors.

Grants Received

Speaking of grant awards, two grant presentations to the museum were made during the Amherst Show. Both awards have the same end purpose: to fund the finishing touches needed to put Connecticut Company car 865 back into passenger-carrying operation on the Branford Electric Railway.

The museum received the inaugural W. Russell Rylko Memorial Award from the Mystic Valley Railway Society. This \$10,000 grant is named in honor of that organization's founding and only

president, who served for 43 years leading MVRs before his passing in 2013. The museum is proud to accept this award and hopes it will help to honor Mr. Rylko's enthusiasm and life-long support for historic railway preservation. The funds will help fabricate and install new motor axle-suspension bearings, which together with the FEMA-funded completion of the traction motor overhaul are the last major piece needed to return it to operation. Accepting the award at the Amherst Show was museum director Nathan Nietering.

The museum also received grant funding from the Amherst Railway Society, as part of their annual railway heritage preservation awards program. Amherst has generously awarded grant funds to the museum for the past several years to support several individual smaller projects to complete 865's restoration. The funds which Amherst grants to organizations such as ours come primarily from the success of the annual Railroad Hobby Show, and other donations. This \$1,500 award will be used to complete several important details which will enable the car to return to service this year. Accepting the award for the museum was SLTM President Emeritus Bill Wall.

We look forward to welcoming members of both organizations aboard car 865 later this year. Many thanks go to the following museum members who volunteered one or both days to staff the museum exhibit: Bill Wall, Wayne Sandford, Tom, Helga, and Lisa Savage, John DiSarro III and Vicki DiSarro, John Soehnlein, Clay Emerson, Bobby Ryan.

--Thanks to Nathan Nietering for coordinating these activities and providing this report.

Membership News

Annual Meeting 2014

At the Annual Meeting on November 8th, 2014, trustees Peter Callahan, Charlie Dennis and Alan Zelazo were (re-)elected to the Board. President Jeff Hakner and Vice President Ron Parante were re-elected to their positions. The dinner program honored William Ketterer, an active member since 1956, who was accompanied by many friends and family members. Photos and recollections of Bill's projects were shared, with a narration by Marilyn Schreiber, and in particular his mentorship of younger members for several decades was highlighted. When new volunteers, tentative and intimidated by the museum, approached Bill, unsure if their modest skill set was up to snuff, Bill reduced it to a simple question: "Can you wash lightbulbs?" He would then set them to the task of cleaning years of subway grime from the specialized lightbulbs that were then being obtained from scrapped New York R1-R9 subway cars. This ritual was recalled fondly by Al Zelazo and Ed Sarkauskas, who re-enacted their youthful days at the museum by washing actual R-9 light bulbs at the dinner and presenting them to Bill for his approval.

Museum receives ATRRM Award

The Association of Tourist Railroads and Railway Museums (ATRRM) has its roots in an association of electric railway museums called AMPERE that was formed in 1960 at our museum. At the 2014 ATRRM convention, held in Tyler, TX, the museum was given the 2014 ATRRM Significant Achievement Award for

our work on Elevating the Collection and repairing flood-damaged motors. This convention fell on the exact date of the Annual Meeting and so none of the Trustees, Officers or Staff could attend. Accepting the award for the museum was Jim Vaitkunas, a member for the past 33 years who lives in Minnesota and is active with the Minnesota Streetcar Museum.

New Members

The museum welcomes quite a few new members who have joined since our last report: Margaret E. Azarian, Eva Besmer, Peter Besmer, Anthony J. Bianco Jr., Antonio L. Bianco, Annie Bolick, Bud Breslin, Rick Cross, Santo Joseph Galatioto, Adare Ghist, Richard E. Harrison, Robert Hershkowitz, Thomas J. Higgins, James Holmes, Jerome Landesman, Alexandra Maynard, Nicholas Maynard, Patti Maynard, Todd Maynard, Mark Palmieri, Manning Pavone, Harry Gene Roscoe, Lawrence E. Rosenthal, Robert R. Sampson, Bruce Seymour, Gage Seymour, Mariah Seymour.

In Memoriam

We just learned that Thomas J. Liscoe, a museum member since 1973 and resident of Bayshore, Long Island, passed away in July 2014. Paul Ritterhoff, who was also active at Baltimore Streetcar Museum, passed away in December. His daughter Claire notes that Paul had a "lifelong love of trains and streetcars and greatly enjoyed reading about streetcar and transportation museums and trains." Two Branford-resident members passed away

during December: John B. Kirby, a member for 22 years, father of museum member Jon C. Kirby, and Art Johnson, whose former residence on Harbor Street once saw Connecticut Company trolleys passing by. The museum lost two long-time members who were also men of the cloth: The Reverend William H. Blose, of Media, PA, who had been with the museum since 1958, and Pastor Donald R. Hoger of Hyde Park, NY, with over 49 years of continuous membership. We extend our condolences to museum member J. Calvin Gerhard on the loss of his wife Ethel, and to our former Treasurer Ron Kupin on the loss of his wife Charlotte.

Bill Slinsky

William J. Slinsky Sr., a museum member since 2002, father of



William Slinsky with his tour bus. (courtesy R. Slinsky)



Rudy operating at the museum in August 2003.

museum member Richard Slinsky and father-in-law of member Kathy Slinsky, passed away on March 8th in Darien, where he had resided since 1965. Bill was born on June 28th, 1942 in Stamford and developed a broad and passionate interest in anything that rolled on wheels, including buses, railroads and antique cars. He drove for the Connecticut Company, which after ceasing trolley operations in 1948 continued into the 1970s as a private bus operator, and also for its successor Connecticut Transit, where he was a supervisor. Bill also owned a number of enterprises including a car dealership, car rental agency and a messenger service, and worked as a driver and later a manager for a tour bus company.

In addition to being a constable and special officer of the Darien police department, Bill was a minor movie star, appearing as an extra in several films including "The Stepford Wives" (1975), "Scenes from a Mall" (1991) in which he appeared with his 1957 Ford T-bird, and "Everybody's Fine" (2009) where he briefly shared the screen with Robert DiNiro.

Bill's wife Elizabeth, mother of Richard and mother-in-law of Kathy, passed away in November 2014. Bill's older son, William J. Slinsky Jr., also predeceased him. Bill is additionally survived by his brothers Gary and Paul, daughter-in-law Lisa, grandson Zachary, grandson Alan, wife Liz, and great-grandchildren Pippa and Anika, and four nephews and nieces.

Rudy Rinda

A long-time museum friend and dedicated volunteer, Rudolph J. Rinda, passed away on February 17th at the age of 90. Rudy, as he preferred, was born on March 21st, 1924 in Little Ferry, NJ but soon moved to Astoria, NY where he spent his childhood on Steinway Street, watching the trolleys go by. Trolleys would operate on that street until being replaced by buses in the mid-1930s. From this he developed a love of trolleys that he would ultimately express at the trolley museum.

In the intervening decades, Rudy served in the Army where he attained the rank of Staff Sergeant. He returned to the state of New Jersey after marrying Blanche Milka and there raised a family in Ridgefield Park. Later in life he settled in New Milford, NJ where he resided at the time of his passing. His career was primarily with Monroe Business Systems as a repairman of photocopiers and similar machinery.

Ca. 1978, Rudy discovered the Trolley Museum through his friend Stuart Palmer. Two years later, Rudy passed the operator training class and began volunteering regularly as a trolley operator. His other hobbies included fishing, gardening, model railroading in O-scale, and photography. Rudy's photos were regularly used by the museum for postcards and marketing materials. Rudy also enjoyed spending time with his grandchildren and eventually his great-grandchildren. After he reached the age of 80, Rudy retired himself from being a trolley operator, although he still visited the museum frequently.

Rudy's first wife Blanche passed on in 1993. A few years later, he was married again, to Alice Bauer, who survives him, along with his son Robert and wife Nancy, his son Richard and wife Dorothy, step-son Richard and wife Lorayne, step-daughter Eileen and husband Steven, brother Warren Rinda and wife Vera, grandchildren Todd, Christine, Keith, Stacie and Katelyn, and great-grandchildren Colin, Brayden, Mila, Sawyer and Kyleigh.

Detailed Departmental Doings

Track

Almost all of the track work since the last issue has been for the Elevating the Collection project and is described in that article. The following volunteers logged hours in track during this period: **Jeff Hakner, Paul Davy, Joe Cavanagh, Joe Perrino, Jay Nickse, Mike Hildreth, Joe Marcarelli, George Papuga, John DiSarro, Bob Ryan, Rob Paradis, Matt Wuensch, Nathan Nietering, Mark Palmieri, Jim Day, William Wall, Denny Pacelli, Matthew Pastore, Jimmy Boylan, GWCC students Nolan Bath, Frank Contento, Rick Dunlop, Ryan Durand, Caleb Gulovsen, Carlyle Henry, Timothy Holmberg, Thomas Lenhart, Mathew Lyons, Daniel Mongillo, Efrain Ortiz, Anthony Perrelli, Dylan Powers, Kevin Randall, Joe Russo, David Rosario, Rachid Saadi, Christian Savarino, Justin Shepard, Matthew Vitka, Matthew Wuensch.**

Signal

Various mishaps during the late fall and early winter befell signal & communications wires, including a falling tree limb in Riverside curve, a new line pole being installed near Edgewood that got tangled in a cable, and a contractor's backhoe bucket which like a divining rod for electrons, positively located an underground telephone cable. These have all been repaired. As new tracks are completed for Elevating the Collection, the signal crew is not far behind with the Thermit kit, welding rail bonds that ensure proper negative return continuity, including cross-bonding of the rails inside Building 8. C&S volunteers included: **Dana Bowers, Harry Whipple, Joe Cavanagh, Layth Salman, Terron Edwards, Paul Davy, Jeremy Peterson, Jeff Hakner, John DiSarro, Joe Perrino, GWCC students Rick Dunlop, Caleb Gulovsen, Anthony Perrelli Jr., Dylan Powers, Joe Russo, Justin Shepard.**

Line

Span wires and insulators were replaced on the lead to the shop. A broken hanger was replaced near "Alex" switch. In the Edgewood area, line wires were moved to replacement poles. Span wires were attached to the new pole near signal 15. Just beyond the end of the line, a ground anchor was relocated in coordination with the Branford sewer dept. which operates a pumping station on our property. Line volunteers: **George Papuga, Paul Davy, Ted Eickmann, Bobby Ryan, Joe Cavanagh, Rob Paradis.**

Buildings&Grounds

Of course the month of February was dominated by snow removal, followed by additional snow removal, followed by a little bit more snow removal. (**Paul Davy, Rob Paradis, Bobby Ryan, Joe Cavanagh, D.J. and Liz Zelanakas, Tom Burke.** Prior to that, as 2014 came to a close, we saw the holiday lights and decorations put up for our Santa on the Trolley event, and then removed and put away. (**Fred Kossack, Cathy Pellegrino, Carol Reid, Jimmy Boylan, Wayne & Christine Sandford, Clay Emerson, Mike Hildreth, John Aurelius.**) Trenching and underground conduit installation for the new power service was completed in January. (**Jeff Hakner, Paul Davy, Rich Parente**) The utility company, CL&P, was set to install the new pole and pull in the wires....on the day of the blizzard. This work was "frozen" until the snow went away, and has just now resumed. Work began on converting 14 River Street into an archival storage and research facility (**Wayne Sandford, Mike Hildreth, Rodger Addil, John Aurelius, Joe Perrino, Jeff Hakner.**) Ted Eickmann has started work on the propane fuel system of our non-functional 3-ton forklift.

Motor / Flood Recovery

There is considerable progress to report on

several fronts with the Motor Repair program:

ConnCo 865: The four overhauled WH101 traction motors were delivered by Schulz Electric in December and placed in safe storage in building 8 by **Rob Paradis, Joe Cavanagh, Jeff Hakner, Nathan Nietering.** Re-assembly is pending replacement motor bearings. The **R. Russell Rylko** award and a grant from the **Amherst Railway Society** have provided the funding to have replacement motor bearings made (see article pg. 3). Each motor has two pairs of bearings which are split as upper/lower halves, for a total of 8 pairs. Although the museum has original Connecticut Company blueprints for these parts, these are "nominal" prints for as-new condition. Considerable measuring and double-checking was performed to get accurate dimensions for the best custom fit of each bearing set to the existing worn axles and motor housings. The bearings are being cast and machined by **Uhrich Locomotive Works** (Strasburg, CO) using the same methods by which the originals were made. Bearings are expected in late Spring. **Jeff Hakner** and **Dennis Pacelli** coordinated the order. Meanwhile, Gateway students **Christian Savarino** and **Matt Wuensch** cleaned up the bearing caps.

New Bedford RPO 302: Three of the overhauled WH101 motors were delivered in December. As for the fourth, its armature could not be repaired using the clean, bake and re-insulate method and required a "rewind." Those of us of a certain age may have fond memories of having to rewind VHS tapes before returning them to the video rental store, and those of an even more certain age may cherish memories of unloading their 8mm or 16mm movies from the mechanism and performing a high-speed reel-to-reel rewind. Unfortunately, this is not as simple: The armature is placed on a stand and the old winding is stripped out. This is a somewhat destructive process since numerous insulation



ABOVE: Joe Cavanagh transfers signal wires during pole replacement. (R.Ryan) RIGHT: The 2015 operator training class is in progress but snow made things tough during the early weeks. (l-r) Nathan Nietering, Richard Slinsky, Bill Dobkins, Mike Hildreth, Rodger Addil, Peter Callahan clear the way for car 357 to be used in training. (M.Kelley)



treatments have rendered the winding a partially solidified mass. The process is done carefully enough to be able to extract one or two coils intact. Measurements are taken of over 20 critical dimensions. For example, the winding was found to have 37 coils, each comprising three #9 wires wound thrice around. This matched up exactly with manufacturer's data in the museum's archives. Schulz Electric then requested bids from several custom coil manufacturers and after selecting the best bid, received a few sample coils which were tested on the armature for proper fit. In the meantime, while the coils were being made, the steel armature core was cleaned up and special insulating paper liners were applied to protect the coils from sharp edges. The commutator, now completely disconnected, was given a breakdown test by wrapping a bare wire around it and applying high voltage from it to the grounded shaft. It is better to find a commutator fault now than after the expensive winding has been placed!

Now, it was time to install the coils. The winding process is intimidating to a novice, but routine for the experienced winder technicians. The first coil is placed in the correct core slots (it does not matter the absolute position, since the armature is perfectly symmetrical, just the distance or "throw" between coil sides) and the bare ends of the wires are inserted into the correct commutator slots. Then the next coil is placed in the next slot, with the same throw, and so on. The winding is in two layers and so after the winder goes all the way around, the original first few coils need to be lifted up to get the bottom sides of the last few coils in. Now each slot has two coil halves in it, and each commutator bar has two wires in its connection "neck." A quick "bar-to-bar" check is done to make sure the wires are connected properly. Then each commutator neck is carefully soldered to the wires, being certain not to create an inadvertent bridging or "short". Wedges are driven into T-shaped grooves in each slot and banding is applied to hold the winding down

against centrifugal action. After another electrical test, the finished winding is dipped in insulating varnish and baked.

The rewound #3 motor was completed in late March and returned to the museum. Car 302 is now in the shop where each motor is being re-fitted to its axle and tested.

Brooklyn 4573: The motors for this car were overhauled early in 2014 but poor wheel condition had prevented re-assembly. Since turning the wheels requires removing the axles, and thus complete disassembly including removing the motors, it makes sense to do this now, rather than return the car to service and have to pull it in one year because the wheel flanges are worn out. Thanks to a donation from members **Lou Guadagni** and **Greg Gil**, the wheel truing has been funded. We needed custom cutters for the streetcar-style wheel profile. **Jeff Hakner** did the CAD design work and provided a file to the Apex Tool and Cutter division of JEMCO in Beacon Falls, CT, which had made the original lathe cutters for our wheel lathe decades ago. These cutters have just arrived. In the meantime, some more work was needed to get the wheel lathe going again, after a period of several years inactivity with two major intervening floods. The wheel lathe area had followed Murphy's Law of Horizontal Surfaces and a lot of material stored on it had to be cleaned up. The bearings, drive shafts and other mechanisms that were flooded were inspected and found to be OK -- the thick film of oil had protected them from rust. We test operated the motor which slides the multi-ton tailstock and it repeatedly blew the fuse, despite having been repaired and tested OK in 2013. The problem was a low spot in a conduit containing the wires that feed the motor...it was still partially filled with Sandy saltwater! The conduit was replaced and a new wire bundle installed by GWCC students **Tom Lenhart**, **Mathew Lyons**, **Matt Vitka**, **Matt Wuensch**, **Christian Savarino** and **Frank Contento** under direction from **Jeff Hakner** and **Jim Day**.

Brooklyn 1792: Funding for motor repair was provided by a donation from **Jimmy Boylan**. The car came into the shop a few weeks after the Annual Meeting. This was the first car that could not be lifted directly by the electric car jacks because it has sloped sides -- the jack "toe" would not extend far enough to lift the car and still clear the wider part of the body. A pair of new steel I-beams was purchased, each about 9' long. This allowed the jacks to be further back from the car and lift the beams, which in turn lifted the body. The approach was successful and the trucks were removed easily. The two WH68 motors came out and were sent to Schulz, where overhaul work has just been completed. While up on the jacks, the National B-1 air compressor was dropped down with a lift table. This had been partially flooded during Sandy. The car was re-trucked and sent to Barn 6, where **Conrad Misk** has been re-installing whatever components we have available to restore it to its passenger car appearance. The air compressor was torn down and inspected. The mechanical end was still full of salt water but no corrosion was found. It was quickly drained, cleaned and re-filled with good oil. New gaskets were made. The electrical parts have been cleaned and the compressor motor armature has been placed in the lathe for commutator truing and undercutting. (**Joe Marcarelli**, **Joe Cavanagh**, **Jeff Hakner**, **George Papuga**, **Paul Davy**, **Matt Pastore**, **Mike Hildreth**, **Joe Perrino**)

Montreal 2001: Four new motor pinions are currently being manufactured by XTek. Funding was supplied by a grant from the **Twentieth Century Electric Railway Foundation** (see article pg. 2). Once these pinions arrive in late April, motor installation will begin. In the meantime, the DH-16 compressor which had previously been taken down for overhaul and flood repair has been completed. The field coils were re-insulated and re-installed with new motor leads. The armature was cleaned, re-insulated and re-installed. The compressor safety valve was inspected,



L: Will this giant mountain of snow be gone by Members' Day? R: (l-r) Dennis Pacelli, Jimmy Boylan and Joe Marcarelli have a conference beneath car 1792, which is supported by the I-beam spanning two jacks. (*J.Hakner*)

cleaned and tested. Meanwhile, re-painting of the window guards and other trim continued. (Dennis Pacelli, Jeff Hakner, Robert Dusel).

Toronto 2898 was brought into the shop and jacked up. All 4 traction motors were labelled and removed in record time (1 week), in part because of the assistance of the GWCC volunteers. They are now being overhauled at Schulz with an expectation that the car will be operable again in time for the 2015 Santa season. In other news, the light circuit was repaired by ... **Jimmy Boylan**.

Restoration&Maintenance

Johnstown 356: The activity since the last issue has been all about things that open and close, and things that seal out water therefrom. The platform doors were installed one pair at a time. Each required numerous trials to obtain the proper fit and mechanical action. Door linkages are adjusted so the doors close firmly, but not so tightly that they bind. Next, the window sash: The rubber gasketing which backs up the glass panels, and seals the bottom of the sash when closed against the sill, is always an issue. Whatever manufacturer sourced the original material, perhaps before World War II, is rarely still in business or has the particular shape and thickness in stock. Thus begins a long search for obtainable alternates that will work. The window sash too required considerable attention. These brass frames are in several pieces, held together at the corners with internal connectors and screws. Many of these were loose, damaged or missing over the years. Hundreds of small screw holes were re-tapped or drilled and tapped in new locations. Once assembled with the glazing, each sash requires some further fit in the window posts to prevent rattling without binding. **Ted Eickmann** and **Bob Yohe** report that this process is now done.

H&M 503: **Alan Zelazo** has been working on numerous interior details, primarily in the end vestibules. The ceiling panels were cleaned,

sanded, primed and painted. Swing-out sash with advertising holders were removed and taken back to the shop for cleanup. The head/tail light assemblies on one end were re-wired and re-painted. The motorman's cab area has been scraped down and re-painted. The motorman's indication light, which tells the motorman that all side doors are closed and it is safe to pull out of the station, was removed for thorough cleaning and re-painting. **Paul Hilzen** assisted.

Atlas Loco is now four-wheel drive! **Ernie Darrow**, **Steve Ubowski**, **Rick Cross** and **Dennis Ingalls** completed the drive chain installation. A block heater was installed for cold-weather starting. The locomotive made a test run up the ramp to Building 8.

Boston trackless 4037: **Ted Eickmann** continued extensive metal repair work in the area around the rear-mounted motor. Also in the area is the flood-damaged electronic converter box, which has been removed for repair.

Philly trackless 205: **Ted Eickmann** worked on the battery charging system. The rear doors were reassembled including newly-milled pieces.

Rhode Island 1504: **Rob Paradis** worked on several "emergency response" items as part of this car's display. The R.I. Co. stocked the car with a few spare grid banks, to get a trolley car going again which may have developed an open-circuit grid. These were painted up for display (ironically, these spares are themselves defective.) Another item of interest is the emergency wheel dolly. In the event of a broken truck spring or locked axle, the only way to get a car moving is to jack it up and support the bad axle on a dolly that is light enough for the crew to maneuver under the affected car. **Rob** cleaned and painted the dolly frame and then went looking for the axle, which had been removed from the car many years ago. The axle was very badly corroded although the small chilled-iron wheels

were in good shape. Thanks to **Kenneth MacKenzie**, Vice President of **MacKenzie Machine Shop** in New Haven, the wheels were pressed off and a new axle was machined from round stock. The wheels were pressed on the new axle and the assembly was delivered to the museum where painting is underway.

ConnCo 1602: The birthday car came into the shop for some winter downtime. Master mechanic **Dennis Pacelli** performed the periodic inspection and lubrication. He then ventured into the world of car body maintenance as he sanded down the #1 end, which was starting to look shabby. After spot-priming and a few coats of **ConnCo** yellow, with white trim and black hardware, **Rob Paradis** re-applied the red numbering and striping. **Jeff Hakner** and **Joe Perrino** inspected, cleaned, lapped, lubricated and tested both brake valves.

CL&E 116: **Paul Hilzen** continued removing and cleaning luggage racks inside the car.

Horsecar 3: Our contractor, **Alex Jeracka**, was slowed by the winter storms which made access to the barns difficult. Nevertheless, one entirely new side-sill has been fabricated and the other, existing sill was straightened. New cross-sills are being fabricated and soon the car will once again be structurally complete.

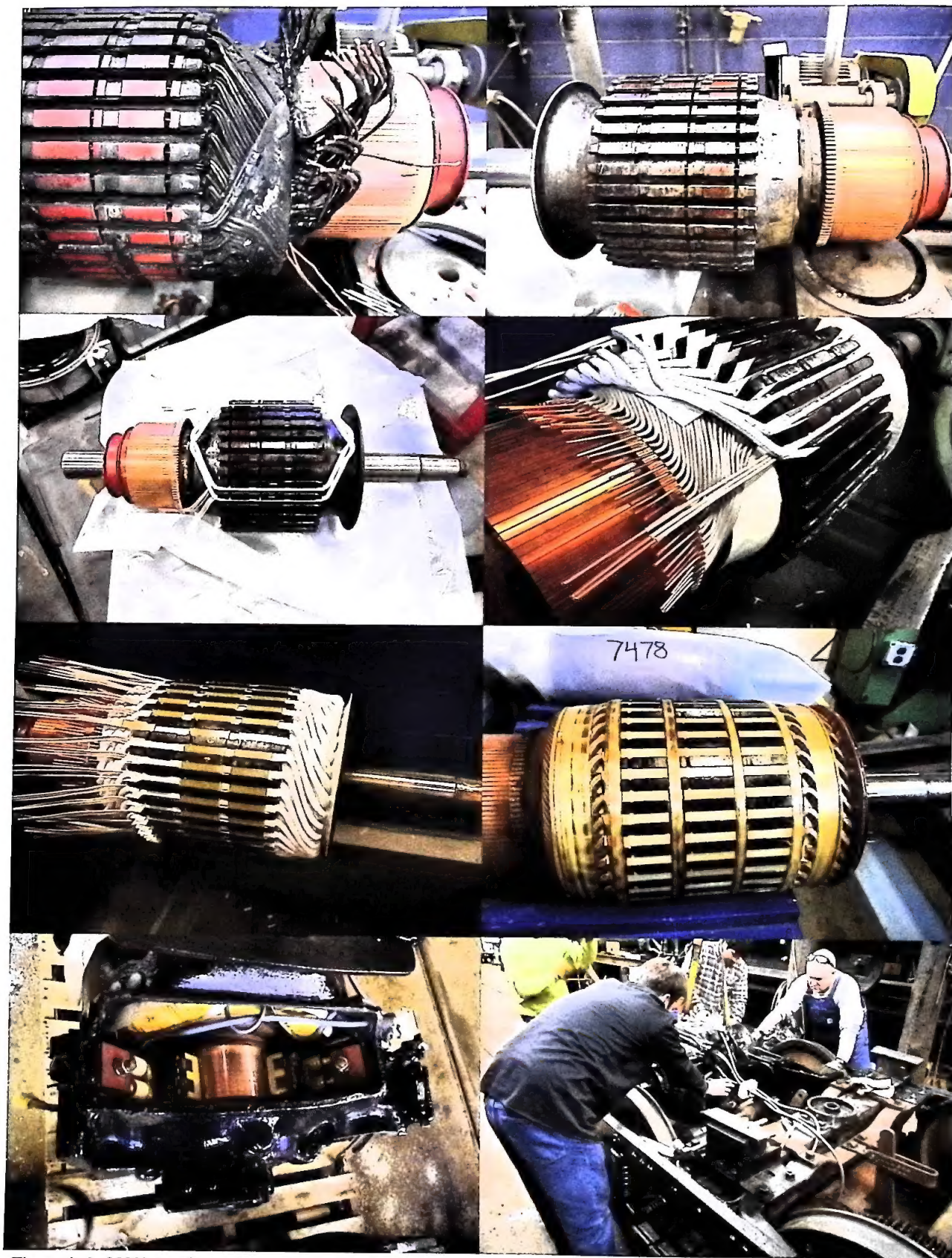
George Papuga installed motorman's curtains and hardware on **ConnCo** cars 775 and 1802.

Lynchburg/Wildwood 34: **Paul Hilzen** touched up paint and striping of this, the first car owned by the museum, which is on display in Barn 1.

Rhode Island 61: To facilitate the interior project on car 1792, **Conrad Misk** relocated the model train layout to this car which, like 1792, is also a work-car conversion lacking an interior. **Paul Hilzen** assisted. The car was displayed in Barn 1 and will be there during the 2015 season.



ABOVE: **Bob Yohe** carefully installs window latches for car 356. MID: Car 2898 on jacks with one truck removed for motor work, March 2015. (*J.Hakner*) RIGHT: Car 1504 on Barn 7 lead with its new dolly wheel display, lettered for **Rhode Island Co.**, on the shop lead. (*N.Nietering*)



The rewind of 302's traction motor armature. Starting from top left: 1) the old winding is stripped off. 2) Next we see the bare core, cleaned up and ready for a new winding. 3) Two sample coils are test-fitted in the slots. 4) Coils are partially installed, with bottom side leads fanned and terminated in the commutator, top sides still loose. 5) All coils are in, top side leads are not yet terminated, and slot wedges are being inserted. 6) Complete winding has been banded and VPI insulated. (An armature from car 1792 is in the background under plastic.) 7) Back at the museum, the re-assembled motor is given a low-voltage break-in. 8) Finally, it is hung on the axle. (*J.Hakner & Schulz Elec.*)

from pg. 1

experience with omnibus manufacturing. Stephenson had been involved with the New York & Harlem in 1832, but did not return to street railway car building until the mid-1850s. He recalled the existing cars of that time as "real horse-killers" because of their weight. His omnibus-style car weighed only 3,000 pounds and was designed to be run by one driver and one horse. A novel feature is that the two axles are mounted to a primitive truck, allowing the entire body to pivot about a central pin. At the end of the line, this single-ended car could be easily turned around, without a track turntable.

Stephenson said "circa 1855" but this was over 30 years later, and other late-life recollections by him have proven to be somewhat inaccurate. The Museum of the City of New York had listed a date of 1855 for car 76 in its catalog, but has no other information on the establishment of this date.

The earliest visual evidence fixing a lower bound on the date of introduction of these cars is an illustration in Ballou's Pictorial, Volume XIII no. 6, p. 248, dated Oct 17, 1857. Here, both the heavy double-ended and the light reversible types of cars of the Sixth Avenue Railroad are clearly illustrated opposite the Jefferson Market (Sixth Avenue between 9th and 10th St.). The latter type of car is depicted with two horses although all other contemporary accounts indicate these were one-horse cars. It should be noted that the focus of this woodcut is the Market. The horsecars being incidental background images, their accuracy in illustration is dubious.



(Library of Congress)

The Henz-Bendel text written ca. 1859 goes into great detail about these Sixth Avenue one-horse cars. The description and illustrations correspond almost exactly to car 76 in its current observed condition. This work also mentions Brooklyn as having

similar cars, but not any of the other Manhattan horse railways, all of which it extensively describes. It could be concluded that these one-horse cars were operated only by Sixth Avenue at this time. It should be noted that while they were separate corporations, with separate fleets and stables, the Sixth Avenue and the Eighth Avenue Railroads shared trackage on the southern portion of their routes.

The minute books of the Sixth Avenue RR. give some vague clues. The composition of the initial fleet of cars in 1852 is not stated. In April 1853, the directors voted to purchase ten additional cars. In 1854, there were 40 cars in use. A report in February 1856 stated that 35 cars were in use. More to the point, a report in February 1857 implied that late in 1856 it had purchased nine one-horse cars. The maker is not specified. Later in 1857, to handle an expansion in service, an unknown number of additional one-horse cars were purchased. Night service was to be handled every 15 minutes by one-horse cars instead of half-hourly by two-horse cars. The Annual Report in February, 1858 states that a total of nine one-horse cars were purchased in 1857, and this brought the total to 20. The Bendel text states that 25 one-horse cars were observed at the end of 1858. Working backwards through the numbers, two of the one-horse cars may have been on hand in 1856 or earlier. These may have been experimental or demonstrator models.

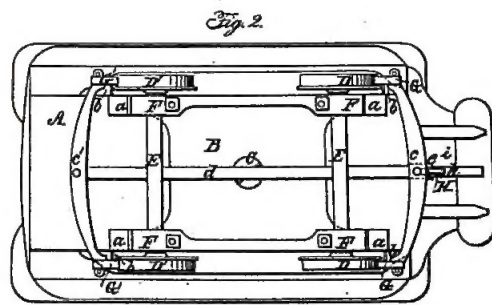
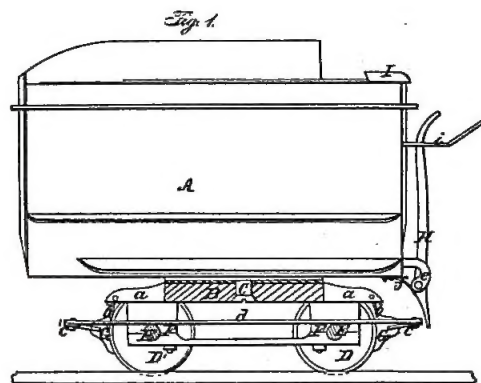
Stephenson received US Patent #26626 in 1859 for the means of

J. STEPHENSON.

Car Brake.

No. 26,626.

Patented Dec. 27, 1859.



Witnesses.

Mich. Hughes.
M. M. Livingston.

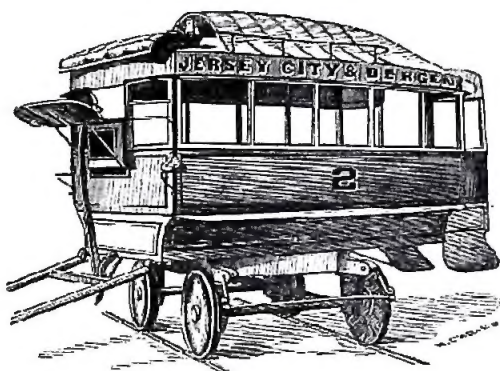
Inventor.

J. Stephenson.

operating the brake regardless of which way the body is facing, allowing for the reversible operation. Curiously, he did not claim for the reversing feature itself.

An upper bound on the date for car 76 is provided by the date on the cast-iron wheels: Mar 24, 25 and 26, 1862. These dates do not imply that the car was built as late as 1862. Given the rough track conditions and brittleness of cast iron, replacement of the wheels might have been required annually or even more frequently.

These lightweight Stephenson cars may have been easy on the horses, but were no match for the explosive growth in horsecar ridership. They would have quickly been obsolete and relegated to low-volume lines, if any. It is therefore somewhat of a mystery why #76 survived. One could speculate: The Eighth Ave. RR. had a major carbarn fire in 1887, destroying 130 cars and killing over 1,000 horses. It is known to have purchased or leased cars from many other companies to get back in business. Perhaps old #76 was obtained from Sixth Avenue at this time? No other photos or illustrations of this type of car in Manhattan service are known.



Wright, A. *American Street Railways*, Chicago 1888, p. 12. courtesy Hayes Hendrick

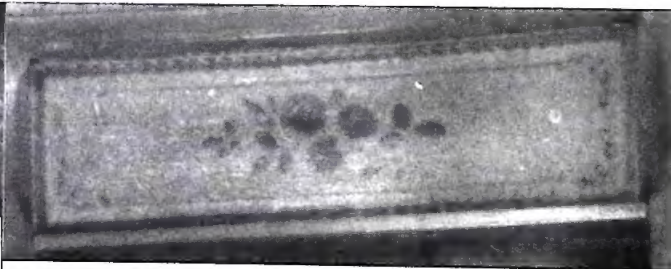
Car 76 has a cousin of sorts in preservation, which is almost as old: Car #1 from the Omaha Horse Railway. It is lettered inside for Crerar Adams & Co., a Chicago-area dealer in railroad supplies. We know that the earliest horsecar operation in Chicago

was during 1859. It could be speculated that C-A&Co. acted as a broker to bring this Stephenson car to Chicago as a demonstrator. It was apparently not successful and the car was sold second-hand to Omaha in 1869 for \$700 as the railway's first car. It had difficulty negotiating curves and was soon replaced with heavier, 16-foot cars. Miraculously the car survived and was preserved by the Omaha City Railway, and featured with photo in the *Omaha Daily Bee* of Jan 31, 1909. The car was a highlight of the 1954 centennial celebration. Shortly thereafter, it was purchased by wealthy plastics entrepreneur Harold Warp, who in 1953 established Pioneer Village in Minden, NE. This tourist attraction is still open today, and features thousands of artifacts relating to the western pioneers. The horsecar is on display in one of their buildings. Other cities used these type of cars, evidenced by the above engraving of one in Jersey City, and a photo of several East NY & Jamaica RR. cars.

The next surfacing of car 76 is in late 1897. The *Street Railway Review*, Dec 15, 1897, p. 820 depicts this car in an engraving. The text explains that the Fourth Avenue streetcar line was in the process of converting to electric conduit operation between Astor Place and Grand Central. A test run was conducted:

...the new electric cars were accompanied over the route by one of the horse cars used by the predecessors of the company in the early days. One of these vehicles, called by employees a "bone-shaker," was taken out of its quarters and driven by an employee who drove it nearly 40 years ago. Several members of the Board of Aldermen were guests, but before the trip was finished they had all the enthusiasm shaken out of them.

The *New York Times*, Nov 1, 1897 makes reference to a test trip with two electric cars, with company officials and aldermen aboard, but does not mention the horsecar. The S.R.R. engraving clearly shows the car number as 75. A photo which has been widely circulated since it appeared in the books *Time of the Trolley* (Middleton) and *Buses, Trolleys & Trams* (Dunbar) is apparently a photo of this same event, and the engraving most likely was taken from the photo. It is likely that the car number was copied incorrectly. Curiously, in the photo, some doctoring has taken place in the area of the car number, and also of the date on the wheels, which has been crudely made to read 1855. This is almost certainly a photo of our car 76, as a large chunk missing out of the wheel tread is in the exact same angular relation to the



L: Interior of Omaha Horse Ry. #1, June 24, 1954. (Henry Hamann coll. #6153-901, print via John Stevens) A close-up of the floral pattern on this car (above) vs our car #76 reveals differences.



wheel casting date as it is on our car. Who took this photo originally, who altered it and why is yet another mystery. The image is credited to the collection of Leroy O. King Jr., who passed away in 2009, and of the Railroad Museum of Pennsylvania which has no additional information on it. At any rate, this 1897 photo is a staged one and from the text it is apparent that the car was long out of service and pulled out for this special occasion.

The year 1897 is also notable in that the Second Avenue R.R. was leased by the monopolistic colossus, the Metropolitan Street Railway. It had recently leased the New York & Harlem, and would also swallow up the Third, Sixth and Eighth Avenue lines. This giant holding company would not itself hold together; in 1907 bankruptcy caused the various leased companies to be broken free. The Second Avenue R.R. returned to independence but was never solvent again, being managed by various receivers.

During this 1897-1907 time however, the Metropolitan was a great mixing bowl, with cars being moved around the system and an overall re-numbering taking place. The lineage of car fleets from the various subsidiaries has unfortunately been lost to history, because no complete roster of the Metropolitan is known to survive. That the Second Avenue wound up with car 76 does not imply that it owned it prior to 1897.

The next occasion on which 76 makes a photographic appearance is June 17, 1923. On this day, a parade was held on Fifth Avenue to celebrate the 25th anniversary of the unification of the City of Greater New York comprising its five boroughs. Since there were no streetcar tracks on this avenue, the car was pulled on a parade float behind two highly ornamented white horses, with two top-hatted men on the roof seat and people in 1850s-period dress inside.

In this photo, from the N.Y. Daily News Archives (the photo is copyrighted by Getty Images #97287640 and could not be reproduced here because of licensing issues), it is noteworthy that the sign proclaims this to be the "OLDEST HORSECAR IN EXISTENCE" with a date of 1853. The name of the receiver of the bankrupt Second Avenue R.R. Co., Charles S. Chalmers is also prominently displayed. A small sign on the side of the car reads "BUY IT IN YORKVILLE" -- perhaps this was a neighborhood marketing campaign at the time.

Also noteworthy is that the letterboard (just below the roof) has been repainted to read "CENTRAL PARK" which is nonsensical (it is repeated from the lower lettering). The 1897 photo documents the letterboard, still visible on the car today bulging under the paint: "8 AV, CANAL ST." The lettering of the car is a



Frank Leslie's Illustrated Newspaper, May 25, 1878, showing the opening of the Gilbert (6 Ave.) Elevated R.R. on April 29, 1878 with a steam dummy locomotive, which seems to be spooking the horses. View from 9 St. looking NW with the Jefferson Market site behind the elevated structure. Contrast with the 1857 view on page 9. A close-up reveals the style of lettering in use on the 6th Avenue horsecars at this time. The Astor House was located at the line's terminus, Broadway and Vesey. (via Library of Congress)



This 1895 view looking north along Central Park West at 70 St. may have been intended to capture the Hotel Majestic, between 71 and 72 St., which had been built the year before. In the distance, the Dakota Apartments building is unmistakable. Central Park is on the right. The photographer also recorded the appearance of an 8th Avenue horsecar #149. The sign above the front bonnet says "HARLEM" although this car is heading south. (Library of Congress #LC-USZ62-67871)



puzzle. Horsecars in the 1870s onward were typically lettered ornamentally with a basic description of the route on which they operated, terminals and/or major destinations.

From the Bendel book and other contemporary illustrations, we know that early horsecars of the 1850s and 1860s carried a simpler lettering. The ca. 1859 illustration of the 6th Ave. reversible-body car shows the letterboard "CANAL ST. to 59th ST via 6th AV", with no other marking. However, an October 1854 article in the *New York Times* indicates that cars of this railroad were to be painted with the words "CANAL ST" and "BROADWAY" in large letters *below* the windows.

The 6th Ave. RR. opened Aug. 11, 1852 with an initial route starting at Chambers St. and West Broadway, via West Broadway to Canal St., via Varick St. and Carmine St. to 6th Ave. and then north, initially to 44th St., although the line was franchised as far as the Harlem River. This of course became an impossibility when Central Park was mapped out in 1853. The line reached 59th Street (the south end of the park) in March 1856 [*New York Times*, Dec 26, 1865]. The southern end of the line was extended during the early years to the corner of Vesey St. and Broadway.

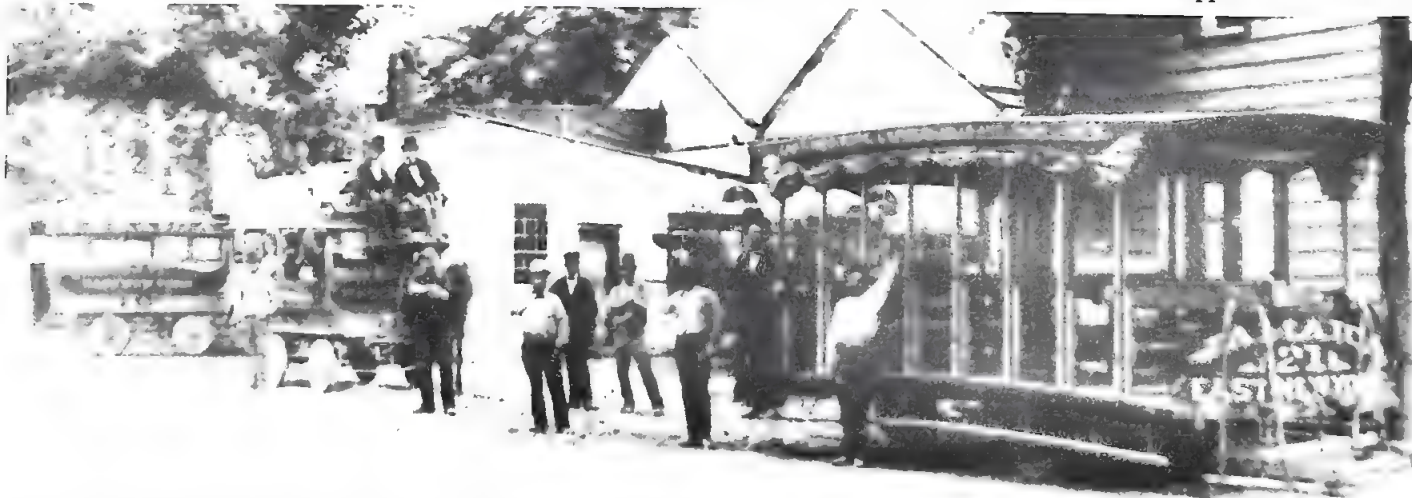
The 8th Avenue Railroad opened a few days after the 6th and shared the route along Canal St. and south. A branch opened along Canal St. east to Broadway. The line continued west on Canal St. to Hudson St. and then via 8th Ave. all the way up to 140th St. The same 1865 NYT article also informs us that to distinguish the cars at night, 6th Ave. cars displayed a light green light, while 8th Ave. cars used light red. The colored glass in the lamp box of car 76 is green, reinforcing the idea that it was used as a 6th Ave. car. Yet the 1859 Henz-Bendel text describes the cars as having a red disc.

An 1895 view of an 8th Ave. conventional horsecar shows a letterboard "8th Av. CANAL St. to BROADWAY", with "EIGHTH AVENUE" on the belt rail and "CENTRAL PARK" on the lower rub rail. This is the closest match to the way that our car was lettered. Perhaps because BROADWAY does not fit on the short 10' letterboard, it was placed on the belt rail. It seems fairly certain that this car never operated *along* Broadway. The dating of the exterior paint scheme is uncertain but most likely from the late 1860s onward. The fleet number, 76, may have also been

changed at that time if the car was transferred from Sixth to Eighth Avenue.

The route displayed on car 76 was never a Second Ave. R.R. route. For that matter, neither was the Fourth Avenue route for which the car participated in the 1897 ceremony (that route belonging to the New York & Harlem, which continued to exist as a street railway operator after selling its long-haul train assets to the New York Central). Regardless, the Second Avenue Railroad wound up with this car, which Stephenson claimed he developed for the Third Avenue, other evidence suggests was used on Sixth Avenue, and is lettered for Eighth Avenue! In 1933, the company stopped running streetcars and became a bus operator (East Side Omnibus Co.) Horsecar #76 was given to the Museum of the City of New York, which had recently (1932) constructed its building on 5th Ave. and 103rd St. It was displayed there for decades, and many museum members recall viewing it, perhaps on a school trip visit. During the early 1980s, MCNY began a renovation of its displays and moved car 76 to off-site storage. An object of this size can be difficult to store, and it appears that the car moved at least three times, winding up in a Brooklyn warehouse at Bush Terminal. Unfortunately, during one of the earlier moves, to make the car fit into an elevator, the roof section was removed by sawing through all of the posts, and then re-attaching the roof with mending plates. This was discovered by Marshall Fine Arts Moving when they moved the piece for MCNY for the penultimate time. Our museum used this same contractor to move it from Brooklyn to Branford on December 5th, 2014.

We can thank the Brooklyn Nets for this car! Recently, they rented space in that same warehouse for indoor practice courts. The high ceilings demanded that two floors be combined into one, and this resulted in the landlord terminating MCNY's lease. There were no plans to display horsecar 76 at the main building, since reconfiguration had made this physically impossible. An inquiry was made to the New York Transit Museum. However, NYTM did not have a practical means of displaying the piece either. NYTM reached out to SLTM President Emeritus Bill Wall. After exploring a number of options, it was agreed by all parties that our museum would be the best home. Here, it would join a collection of peers, including the oldest preserved commercially viable electric locomotive, the oldest preserved rapid transit car, another Stephenson horsecar from the opposite end of that



The East New York & Jamaica Horse R.R. began operation in 1865. This 1875 view at the barn on Jamaica Ave. and 78 St. shows Stephenson omnibus-style one-horse cars 10 and 13, others on the barn leads, and open horsecar 21. (Vincent Seyfried coll. / Ed Watson coll. / via J. Stevens)

company's career, and many other significant pieces. Heavily influencing that decision was our museum's long history of off-site display of New York City transit heritage, including elevated car G, which has been displayed in New York twice, and the ongoing loan of the Derby locomotive to the NYTM.

Car 76 arrived inside a box truck, but not after an adventure in Bush Terminal: Since it was last moved, the freight elevator had been "downsized." The car just barely fit and Bill Wall had to run the manual elevator controls while lying under the car! Marshall, which has experience moving other antique vehicles such as carriages, disassembled the roof again so it wouldn't rock and stress the posts during transport. The car was unloaded in two pieces and touched down on the railhead of 12 track. The roof part was handled by four of the movers and re-attached to the main body. Horsecar 76 spent a few weeks in our shop, being examined by several craftsmen familiar with wooden car construction, who gave advice on how to permanently reconnect the roof. Because the car is in a fragile state, it was moved on its own wheels up to Building 8 and placed in the back of 81 track for safekeeping until a long-term stabilization and display plan is implemented.

Some alteration of the car may have taken place during the MCNY and/or 2nd Ave RR. ownership. An electrical cable and connector was routed from the lantern box at the front of the car to a plug underneath, which was used to simulate the illuminated front glass. The "shaft" by which the horse or horses pull the

body is made up of modern pipe and fittings, and does not appear to be the same one visible in the 1897 photo, nor does it correspond to illustrations from the Bendel text nor photographs of the Omaha car. The floral designs painted on the interior above each window are similar in theme to those visible in the photos of the Omaha car, but are significantly different in execution and seem suspiciously pristine to be from the 1850s. Other lettering at the front interior pertaining to the fare collection is also suspect. The large wooden panel beneath the lantern box, which would have held the company name, contains just the number 76, and is somewhat damaged, with previous repairs having been made.

Also arriving with the car is a wooden base about 12' long with lengths of center-bearing rail bolted to the base. The horsecar was displayed on this base while at MCNY. Small dolly wheels in the base allow the entire exhibit to be repositioned if it is on a hard, level floor surface. The rail seems to partially match the pattern used on the Sixth Ave. RR., but lacks the recessed underbody which would engage it on the stringer. It is also quite possible that these rail sections are of more recent origin and were some sort of "shoe-fly" or "pancake" rail used for temporary diversions. The 1897 photo seems to show these same pieces of rail laid loose on the pavement under the car.

Members are welcome and invited to visit the museum during the 2015 season to view this extremely rare and historic addition to our collection!



ABOVE: L: Main body has been placed on the track, now the roof section is lowered and re-attached. (J.Hakner) R: On display at MCNY, date unknown. (courtesy MCNY) BELOW L: Underside shows the swivel bolt, but the pattern does not exactly match the Henzl-Bendel illustration. (K.Rosen) R: Car 76 being moved to Building 8. (N.Nietering)



The Horse Railroads in the Cities of North America

A valuable source of information about the state of transportation in the U.S during the late 1850s is found in a German text entitled "Aufsätze Betreffend Das Eisenbahnwesen in Nord-Amerika. Nach Reise-Notizen des Geheimen Regierungsrath Henz, Bearbeitet. In Dem Technischen Eisenbahn-Bureau De Koniglichen Ministeriums Fur Handel, Gewerbe Und Offentliche Arbeiten, Von A. Bendel." ("Essays Concerning the Railroad Practice in North America, After Travel Notes of Privy Councilor Henz. Edited by A. Bendel. In the Technical Railroad Office of the Royal Ministry for Commerce, Business and Public Works") The publication date is 1862 but it is based on a trip made to the U.S. in April 1859. The original book is in the collection of Yale University [catalog # Neg 82+862b]. About 20 years ago, museum member and noted historian John R. Stevens had the first chapter, concerning street railways, translated by fellow historian Bruce Holcomb (who passed away ca. 2005). This English translation has never appeared in print before. As portions of it describe cars such as horsecar #76, it is presented here along with relevant illustrations. Text in [brackets] has been added by Mr. Holcomb, by Mr. Stevens, or by this editor. Appendices providing facts and figures of the various railway companies, along with their rules and corporate by-laws are not included, since the information was copied (and translated) from an 1859 book which is readily available (Easton, Alexander. A Practical Treatise on Street or Horse-Power Railways ... Philadelphia, 1859.)

To ease access, the passenger and freight stations of railroads which radiate from the larger cities of America are located near the business center. From these stations, single cars are brought by horses to stations in the outlying districts, where trains are formed and locomotive operation begins. On some railroads, locomotive operation had been extended to the inner stations only to be given up again where the traffic on cross streets had been greatly hindered by longer trains. Thus it is that in New York, the Hudson River and the New York & Harlem Railroads have their passenger stations near the City Hall, whereas the locomotive stations lie in the 34th and 32nd streets, respectively, about 2½ English miles distant therefrom. The first-named railroad, which runs along the Hudson River past busy docks has had to give up its locomotive operation along this first stretch. The Philadelphia, Wilmington and Baltimore Railroad originally operated a 3 English mile stretch in the southern part of the City of Philadelphia and a stretch in Baltimore just as long along the docks, with horses; however locomotive operation had been introduced on both although these streets go through very well built-up districts. All the stations of railways which radiate from Philadelphia are connected with each other by tracks which traverse the very regularly-built city in all directions, and from which again side tracks branch off into the warehouses, coal yards, mills and other industrial establishments. These railroads serve exclusively for freight and are operated by horses; only the Philadelphia, Reading and Pottsville R.R. brings passenger coaches from its station at Broad Street with horses single to the Schuylkill, wherefrom the locomotive takes the train.

During the past 7 years [the text may have been written 2-3 years earlier, so it may be more accurate to say 10 years] in all larger cities of the United States, street railways which indeed serve exclusively passenger traffic within the cities and their suburbs and are driven exclusively by horses or mules, have arisen. The first

undertakings of this sort were carried out in New York and Brooklyn, and since very soon the great advantages which these offered the public as well as the operators became evident, the other larger cities did not wait long to introduce this better means of communication.

In the City of New York itself there are at present 5 separate lines in operation, which are owned by as many companies, with around 26 English miles with double track in use, and these lines are being constantly extended. In the neighboring city of Brooklyn, there are 20 English miles with double track in operation and 10 miles under construction, which all belong to one company. Upon these 46 English miles of railroad, according to *The Annual Report of the State Engineer and Surveyor of the State of New York for the Year Ending September 30, 1858*, during the year 1858 no less than 35,606,227 persons had been carried (the miles operated is not complete in the report), while the number of passengers on all other railroads in the State, of which 2443 English miles are in operation, was only 8,180,352 in the same year. The population at the mouth of the Hudson is at present around a million, of which 700,000 are in New York, 200,000 in Brooklyn, 30,000 in Jersey City, and the rest in smaller cities. The number of passengers, which in addition are transported by the 15 steam ferry lines which cross the harbor and by the numerous omnibuses, can be estimated at 35 million in the year, from which an idea can be had of the liveliness of the traffic which prevails at this point on our earth.

Philadelphia, which has 600,000 residents at present, has the most extensive network of these street railways. There are 60 English miles of single track in operation, and the construction of 100 additional miles is pending the permission of the legislature of the State of Pennsylvania in Harrisburg.

In Boston (with 200,000 residents) there are 25 English miles of double track, belonging to several companies, in operation, and in the year 1858 three companies with 17 miles of line together, transported 8,000,000 passengers. In other cities, like St. Louis and Chicago, the first lines have been completed, others are under construction, while Baltimore, Cincinnati and Pittsburgh diligently prepare the introduction of these railways.

The prejudices, which formerly prevailed against such enterprises and, given nourishment by the proprietors of the old omnibus franchises, led to stubborn strife, are now fully nullified. There was fear of loss of value of lots along the railways, a hindering of the ordinary road vehicle traffic and danger for pedestrians, especially in the assumption that impenetrable lines of cars would build up on the tracks in our busy streets. None of these assumptions have proven true. The value of lots in the cities and in particular in the suburbs where stations are located, has risen. Here numerous comfortable one-family houses have been built and also the working class is offered healthy dwellings at a reasonable rent. The workers gladly grasp the opportunity, through a low fare, to get out of their unhealthy and expensive dwellings in the crowded parts of town. But also the more prosperous people prefer to take their family home far from the noisy activity of the inner town, and so do these railroads contribute considerably to the expansion of the cities. The common wagon traffic -- coaches and drays, utilize the track also, and turn out as soon as the street railway car signals its approach through the ringing of

the bell attached to one of the horses, and since the driver can stop the car immediately by an effective brake, so no evils for traffic from the cross-streets, nor for pedestrians have arisen. The low fares, the pleasantness of riding itself in the roomy, elegant and smooth-running cars, and particularly the speed of operation have given the street railways quickly the favor of the public. The traffic is enormous, and the companies do a good business, even though in their franchises they take on the obligation to keep the pavement of the streets in which the tracks lie in good condition, and to pay a significant fee to the city for every car they run. On individual railroads the initial cost has become unbelievably high through the purchase of old omnibus concessions; in contrast the operating costs come very cheap. The old lumbering and uncomfortable omnibuses which nevertheless are far superior to the Berlin omnibuses in elegance and speed, have lost in public favor because of their incessant rattling and because of the shaking (of ground), which American buildings cannot well endure, and in time will probably disappear altogether.

Construction of the Street Railways

The regular layout of American cities, the straight direction and great width of streets has greatly favored the laying out of the street railways. In New York, the avenues and some main cross-streets have a width of 100 feet, the remaining cross-streets of 60 feet. Each of the sidewalks of the latter takes 12 ft. away, so that 36 ft. is still left for the roadway. Even the famous Broadway, the main artery of New York traffic, has an only 36 ft. wide roadway, on which continuously four lines of the most varying vehicles, however none on rails, move; the sidewalks are each 20

ft. wide at the widest parts of the street. Here severe congestion takes place, partly through vehicles crossing, partly through vehicles joining from side streets, indeed the constables posted at all crossing streets understand how to break up the knots with dignity and understanding. On railroads such difficulties would not arise in such a degree as is now the case.

In Philadelphia, Broad Street is 112 ft., its roadway 72 ft. wide, Market Street 100ft., the other streets have with few exceptions a width of only 50 ft., of which the roadway is only 26 ft.

In the broad streets of Philadelphia and in the Avenues of New York and Brooklyn, two tracks always lie next to each other in the middle; in the narrow streets [of Philadelphia] there is only one track in the middle, while the second, for traffic in the opposite direction, is located on the neighboring parallel street. A few lines in Philadelphia and Boston have only one track, onto which at certain places a short parallel side track connects [passing siding]. In these, cars coming from town must wait until the car into town has passed.

At a roadway width of 26 ft. there remains at either side of the car, which is at most 8 ft. wide, still 9 ft. of space, which is quite adequate for the pullout of other vehicles during the short interval of passing.

The surface of the rails corresponds with the surface of the streets as close as possible; therewith the railroads have the same elevations as the streets. The elevations (profile) of the roads in

Pferdebahnen in den Städten Nord Amerikas.
Gelenkprofile in nat. Grösse

Fig. 1

Fig. 1 New York, 11 Avenue



Fig. 2 New York, 11 Avenue

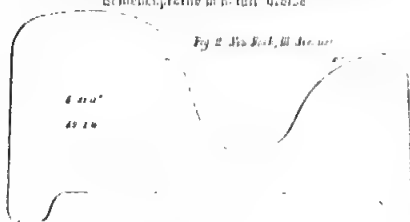


Fig. 3 New York, 11 Avenue



Fig. 4 New York, 11 Avenue

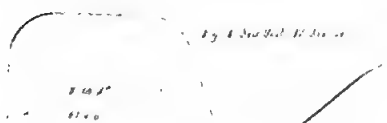


Fig. 5 New York, 11 Avenue



Fig. 6 New York, 11 Avenue

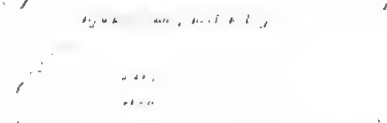


Fig. 7 New York, 11 Avenue

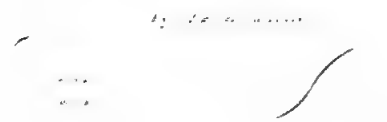
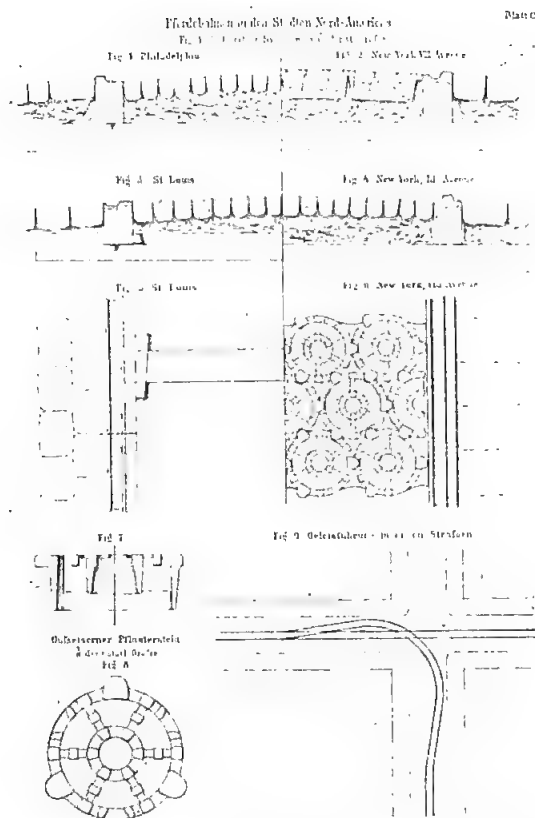


Fig. 8 New York, 11 Avenue

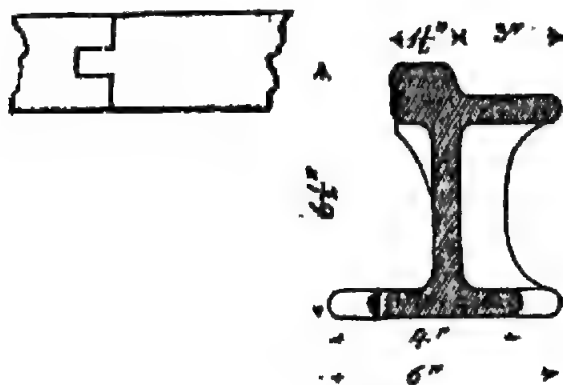


Fig. 9 New York, 11 Avenue





ABOVE: Plate C. BELOW: Illustrations of the splicing of strap rails and tram rail section originally appeared within the text.



New York and Boston are shown together in Plate A. One can see thereon, that grades of 1:40 are not uncommon, that indeed in 8th Avenue, grades of 1:19 and 1:18 exist, which latter ratio is seen as the limit of gradient on mountain highways in Prussia. On the street railways of the City of Philadelphia, which lies on level ground, the elevations show little variation from horizontal. Where such severe grades come together with sharp curves, as is the case on several street crossings in Brooklyn (on the corner of Fulton and Sands St. the gradient is 1:35, the curve radius 60 ft.) a horse is stationed which is hitched on ahead of the climbing car. This horse is adequately employed, since cars come frequently. On descent the brake, which the driver can easily apply, from his stand or seat, is sufficient.

The curves, which occur at turning corners of streets or at the entrance to the car sheds, are sharp. They go down to a minimum radius of 50 feet, and the outer rail is then altogether flat, so that only the inner wheels are guided by their flanges, while the outer wheels run on their flanges. At the small diameter of the wheels from 24" to 30", the sliding of the outer wheels is almost entirely eliminated, and since the wheelbase of the cars does not exceed 6½ feet, so are these narrow curves to be taken without great difficulty. The low speed which is imposed for this eliminates every danger for pedestrians and does not permit the car to derail.

On very narrow streets, which indeed exist in old districts, help has been found to avoid too narrow curves by having the track leave the street center as far as the far sidewalk. Such a case is shown on Plate C, fig. 9.

The first tracks for street railways, whose construction is thoroughly described in the work *Die inneren Communicationen der Vereinigten Staaten Nordamerikas* by Franz Anton von Gerstner, consisted of 2 continuous rows of granite blocks, which, embedded in gravel, were held by the pavement in their position. A groove was chiseled into the upper surface, against the outer side of which a thin iron rail ran, which was fastened down with iron screws driven into wooden plugs. There are at present only a few traces of this construction in Philadelphia and Baltimore.

The new tracks are built with so-called tram rails or groove rails on stringers. The form of the rails must meet diverse requirements. They must not only give the flanged wheels of the railroad cars adequate guidances, but also, since the rails are embedded in street paving, allow the ordinary road wagons to run on it and without great interference, to cross over it, and give them easy steering out of the track. For these requirements, the most varying forms of rails have been proposed. Of those in use, those of New York and Boston, as well as those of Brooklyn, Philadelphia and St. Louis are shown in natural size on Plate B. The weight of these rails varies between 25 and 90 lbs per running yard, the lightest are those from St. Louis and Philadelphia, the heaviest lie on the 4th Avenue of New York, on which the heavy 8-wheeled coaches of the New York and Harlem Railroad [and the New York & New Haven R.R. -JRS] run. The rails of 3rd Avenue are notably heavy, without finding a particular reason for that, indeed this road is now laying lighter rails of profile Fig. 3, Plate B. In the curves of short radius, the cast-iron rails on the outside have, as already mentioned, a simple rectangular profile, while the inner rails have the profile shown on Plate B, Fig. 4, on which the somewhat raised edge should prevent derailment. These rails are cast in approximate 8 ft. lengths and grip together with short tips at joints.

For the roads in Philadelphia the profile Fig. 4, plate B, as well as the track gauge 5'2" is specified by the municipal authorities. This gauge fits the most common wagons' wheel gauges, whose wheels the run on the lower surfaces [of the rails]. The roads in New York, Brooklyn and Boston have the more usual track gauge of 4'8½", which is too narrow for the ordinary wagon traffic. This has no specific gauge, but usually a wide gauge, nevertheless the drivers, to have some profit from the track, use one of the rails, while the other wheels run on the pavement.

With two parallel tracks, the distance between the centers of these usually amounts to 10 ft., so that the space between two meeting cars is two ft.

The rolled rails are from 18 to 24 ft. long and are fastened to sills [stringers] of pine which have a width of 5", a height of 7", and whose upper edges are beveled to take the bottom rail ribs. The fastening is usually with nails, which go through diagonally-bored holes in the rails. This kind of fastening should achieve the benefit that the nails do not so easily work loose, since they are held by the pavement, and besides reduce the entry of water into the wood. Since none of these herewith are attained, so in Philadelphia the rails are fastened with counter-sunk screws to the stringers, as is shown in Fig. 12, plate B. The distance between screws is 2 to 3 ft. 12" long cast- or wrought-iron plates are sunk into the stringers under the rail joints and are held by two screws at 6" spacing, through rail plates and stringers.

The switch parts are of the simplest form and are manufactured in cast iron with hardened running surfaces. Only the inner switch point has a tongue, which is of wrought-iron and made by hand. For right-angle crossings of two roads, cast-iron crossing pieces with hardened surfaces are used. On plate 2, Fig. 5 to 9, such switch pieces are shown.

The sills are bedded in gravel, well under-tamped, filled with gravel and then paved in. Larger stones with even surfaces are set against the outer sides of the stringers and rails, to prevent as possible a widening of the track. Either two rows of such stones are laid, Plate C, Fig. 5, or alternating runners and binders, as in Fig. 6. Between the rails little round stones (cobblestones) are laid, on which horses have a surer footing than on pavement of large stones. In Vesey Street, where the 8th Ave. R.R. leaves Broadway, cast-iron paving has been laid in a grade of 1:43, between the rails. Each iron paver, Fig. 7 and 8, Plate C, consists of 2 concentric hollow cylinders, which have different heights and are connected with each other by 6 ribs. The upper visible surface has little raised areas (pimples) which hinder the slipping of the horses, while the other raised areas which grip into the neighboring stones [blocks] principally serve to produce a connection over the whole surface (Plate C, Fig. 6) The voids in between are filled with fast-stamped gravel or earth. One finds this pavement also otherwise in several of the most-trafficked streets of New York, where the entire roadway is covered with it, as in Nassau Street, on which the Main Post Office is located, and in Courtland [sic] Street, which leads from Broadway to the Jersey ferry and is continuously traveled by the heaviest freight wagon traffic. While the paving in all other streets, especially those to the piers, leaves much to be desired, these streets excel through

The stringers are about 20 ft. long and lie upon cross-ties 6" wide, 5" high and 7 ft. long. For crossties, chestnut or oak is used, laid 4 to 6 ft. apart. The connection of the longitudinal to the cross ties is usually by means of small nailed-on cast iron angles or, as in St. Louis, by means of hardwood wedges in the manner shown on Plate C, Fig. 3 and 5, which however reduces the lifespan of the crossties. The joints of the stringers are either entirely blunt, or half-lapped. Somewhat wider crossties are laid under the joints and hold the joints through two angle irons next to each other. With the method used in St. Louis, a special fastening of the joints is unnecessary.

The stringers are bent for curves. For this purpose several vertical saw cuts on the concave-becoming side are made and, after these are fastened to the crossties, they are driven with wedges into the required curve.

Pferdebahnen in den Städten von Nord-Amerika

Wagen der W. Avenue Eisenbahn in New-York.

Bl. 2

Fig 1 Seitenansicht

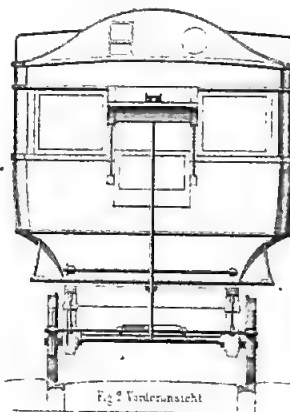
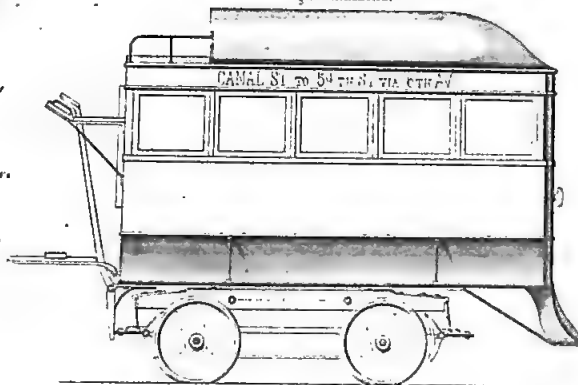


Fig 2 Vorderansicht

Fig 3 Hinteransicht Querschnitt

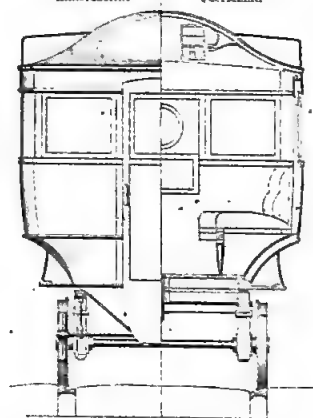


Fig 4 Oberansicht des Radgestelles

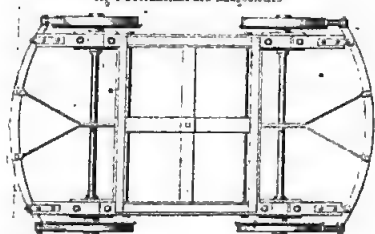


Fig 5 u 6 Oberansicht u Längenschnitt eines innern Weichenstücks

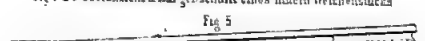


Fig 5



Fig 6



Fig 7

Fig 7 Oberansicht eines äußern Weichenstücks

Fig 8



Fig 8 u 9 Aufeinander abgestimmte Weichenstücke sich rechtwinklig kreuzender Bahnen

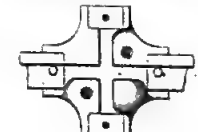


Fig 9

Ernst & Korn in Berlin

Brüder J. G.

their proper appearance. The iron paving seems to hold up very well and requires no larger repairs, however the high cost may indeed prevent a more extensive use of it. The New York Iron Pavement and Street Railway Co. delivers the square-yard of this pavement (Robinson's Iron Pavement) finished set for the price of 5 to 6½ dollars, within which indeed high wage costs are included. The same company also delivers light paving for sidewalks and other ways which are not traveled by heavy wagon traffic, for as little as \$7 per square yard and guarantees, for a small percentage of the installation cost, to keep the paving in good condition for 10, 20 years or longer.

In general the pavement of American cities is bad, even in streets through which the railways run, although the maintenance of these by the companies is obligatory according to the franchises. The municipal authorities are satisfied to keep the paving of a few main streets in tolerable condition. On the contrary, the condition of the sidewalks is generally good, level and clean, and mostly in full width, which varies between 12 and 20 ft., covered with granite or sandstone slabs of great size.

The tracks must be cleaned often; in particular the filth sticks to the lower surfaces of the rails, because water can collect there and horses' hooves throw dirt against them. As prevention of this evil, the form of construction shown in Fig. 3 and 5, plate C, has been adopted. In St. Louis, the rails are laid as high as permissible and thereby better drainage and cleanliness is attained. The flanges of car wheels with this construction are naturally external.

The laying of street railways is performed at great speed. In 48

hours, 400 running feet of track with paving is completed so that operations of cars can begin.

Even through the streets of American cities are throughout well drained by underground pipes and the wood still has a low price, so the upkeep of the railroads is made costly, in that the sills under the paving are soon destroyed. A life of 7 years is considered the maximum and the cost of replacement is estimated at \$7,000 per mile. In America an impregnation of the wood with rot-proofing substances has not yet been employed, however the system of the engineer S.A. Beers is gradually being introduced.

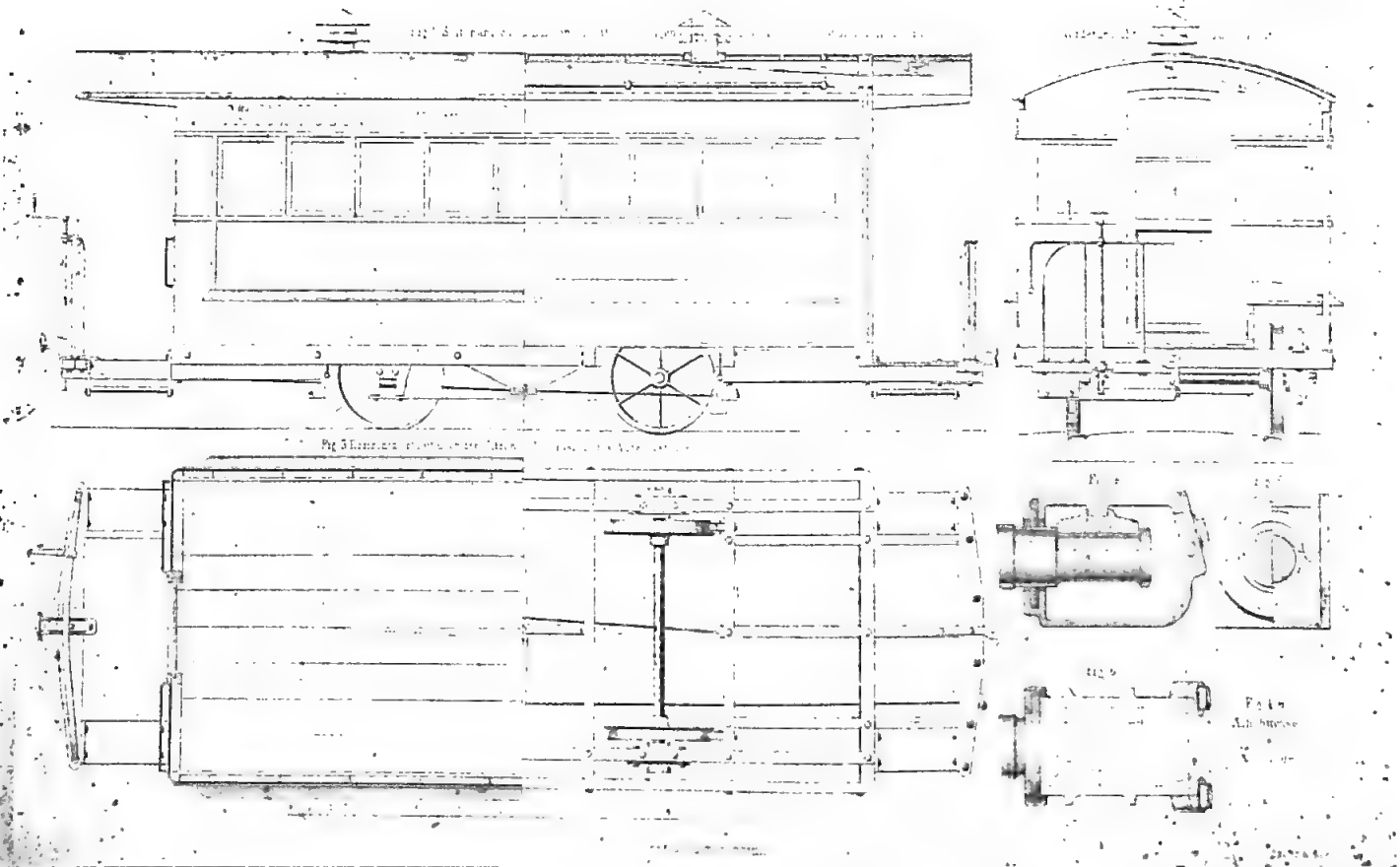
This consists of cast-iron rails of the profile [pg. 16] cast in 12-foot lengths, which weigh about 350 lbs., and are connected in the joints by splice bars. The total height is 6½", the width of the head, whose upper surface is hard-poured [chilled] is 4½", the foot [base] in general 4", and only in the middle and corners - 6". Several vertical ribs support the flange (tram) on which the wheels of common wagons run. In paved streets the rails are held only by tamped gravel filling and the paving; in unpaved streets cross-ties are required. The production of such a track should cost only \$8,000 per mile, hold up 25 years and then cost only \$3,000 to renew.

Operating Material

The offices for supervisors, stalls for horses and sheds for cars and repair shops are installed at the end points of the street railways. These building complexes are usually very extensive, since companies own very many horses and cars, as can be seen from the following table [data are for the 1858 year, except 2nd,

Pferdebahnen in den Städten von Nord-Amerika

Fig. 1



3rd and 8th Ave data are from 1856]

Company & City	Miles (single track)	Horses & Mules	Cars
2 Ave RR, NY	18	368	58
3 Ave RR, NY	11.5	529	59
6 Ave RR, NY	8	421	69*
8 Ave RR, NY	10	471	61
Brooklyn City RR	36	694	115
Union RR, Boston	9.5	251	35
Metropolitan, Boston	12	528	44
Malden & Melrose, Boston	12	225	28

*Includes 25 small cars for 1 horse

Therefore, there are for every car in New York and Brooklyn around 7 horses and for every English mile 4.3 cars and 30 horses. In Boston, for every car 10 horses and for every mile 3.2 cars and likewise 30 horses.

In the large stalls the horses are accommodated in two stories; a part in a high ground floor and a part in a high cellar, to both of which wooden ramps lead. Great care is placed on cleaning, ventilation and drainage of the stalls. Preference is given to the little Canadian horses and mules over other breeds, because they have more endurance and surefootedness than the others and because they have fewer illnesses and their keep is less expensive. In well-stocked stalls the daily feed of a horse consists of 8 lbs. hay with 13 lbs. corn and oats. The animals look altogether well, and one reckons with a saving of 30% in regard to wear and tear with the use on the railroad versus the use on the ordinary city omnibus. On the 6th Avenue Railroad, only 3 (through accident) of 393 horses were lost, and 80 of them have been in day and night service for 6 years.

The regular street railway cars have seats for 20 to 24 persons; such a car which runs on the 4th Avenue line [NY&Harlem RR] is shown on Plate 1. The car body has an outside length of 16'8", width 7'6", which is widened to 8' by two external rub rails, and a height of 6'8" inside, so that one can stand with his hat on.

The entrance doors, which can be rolled back between double walls, are at the ends where also special platforms with side steps and hand rails for easy boarding are mounted. The driver (coachman) stands on the front platform, the conductor on the rear. Boarding and alighting should only be from the rear platform, to prevent accidents. The windows can be lowered and inside of these are mounted either drapes or sliding jalousies [blinds] as protection against the sun. The benches, whose seats and backrests are upholstered, are on the sidewalls, and are so far apart that, even when they are occupied, adequate room remains for comfortable passage through the car. During the times of day where traffic is great, this space as well as both platforms of the car are filled with standing passengers, and so it happens that one such car is carrying 40 or more persons. In the roof there are two little sheet-iron air scoops for ventilation, and under these [at each side of the roof] two round wooden rods are fastened from which leather straps dangle, onto which one can hold fast, when one is compelled to stand, and which also are of good service when one is otherwise going through the car while it is in motion. Under the part of the roof that overhangs the platforms, small bells are attached, whose hammers are connected by a rope. By means of these bells the conductor gives the driver the signal to stop or proceed, in the first case by one, in the second

through two rings. The horses very soon learn to understand the meaning of these signals and save the coachman the use of the whip as well as the brake.

For [interior] illumination lamps are provided, which stand in glass cases by the door, or are hung inside on the sidewalls.

The car body rests by means of caoutchouc [rubber] springs on the axle journals of the construction shown in Plate 1, Fig. 4, 5 & 6. They are closed tight, outside through a screw cover, inside through a set-in ring of rubber disc [dust collar] and are filled with cotton mill waste, which is soaked in sperm oil. The wheels, like all which run on American railroads, are of cast iron, with hardened ["chilled"] running surface and low flange; they are 30" diameter and 4½" tread width. [Fourth Avenue cars had wider tread wheels than the cars of other companies because they shared tracks with railroad cars -- J.R.S.] The axles, of wrought iron, have the diameter 2¼" in the bearing, 3" in the hubs and in between 3¼". The wheelbase ranges from 6 to 6½ feet. The brakes are very simple. On the handrail of each platform a vertical shaft with a horizontal crank is fastened; around the lower end of this a thin chain winds itself upon turning the crank, through which at first a horizontal lever and then from this (through intermediate tension rods) the brake shoes mounted in pairs on a horizontal beam are tightened. The brake beams are sometimes entirely of wood, or with iron or rubber-filled, are hung from the cross-sills of the car body, and are held off the wheels by lightly bent steel springs. In spite of simplicity, the brakes are very effective, and the car can momentarily be brought to a stand.

These cars have a weight of 5,000 - 6,000 lbs., are pulled by two horses on a shaft, and cost an average of \$800. On arrival at the end of the track the horses are re-hitched to the other end or, if two tracks exist, cross over first to the other track. In America the cars run, like with us, always on the right-hand track.

The greatest traffic takes place in the hours 7 to 10 AM to 4 to 6 PM. In the first period all the business people stream into their shops, in the last to their homes. In the intermediate times the traffic is significantly slighter and therewith by use of every car there is considerable dead weight to be moved. On certain railways (Sixth Ave. and Brooklyn) smaller cars have been brought into use, which have only 12 inside seats, weigh 3,000 lbs. and are pulled by one horse on the shaft. Such a car belonging to the Sixth Avenue Railroad company is illustrated on Plate 2.

The car body has a length of 10', width of 6'. The entrance door is located on the rear side, the seats on the lateral sides. In the front wall of the body is a control-counter and under it a glass case for lighting. This has a red glass disc on the outside of the car, so that in the evening the "omnibus" can be seen coming. The coachman has his seat on the fore and low part of the roof. From the upper frame piece of the door, which has no lock or catch, a belt runs under the ceiling of the car to an iron bow on the step of the driver's seat. He wraps the belt lightly around his legs, so that he is able to close the door and keep it closed (by leg pressure). For entering and leaving passengers he opens the door by relaxing the belt.

Next to the coachman's seat is also the box for fares, which has only a narrow opening to the inside of the car. The upper part consists of glass plates, the lower is a wooden box closed with a

padlock, for receipt of the money. Both parts are separated by a horizontal slide plate held closed by a spring. Above the box the amount of fare to pay is shown ("pay here 5 cts") The passenger puts the money through the opening of the glass box, the money falls onto the slide plate and, after the coachman is convinced of the correctness of the amount of fare, he pulls the slide out so that the money falls into the box, which is emptied at the station. The coachman may not receive money, but only change it. The change-making takes place through the same opening through which the door belt runs. The control-clock, whose pointer is turned by one notch when the passenger boards, wherewith a bell rings, seems simply to have the use to remind the delinquent passenger to pay. The pulling of the brake is done by the coachman through a foot lever (pedal) at his seat.

These installations make a conductor superfluous, however an observant coachman is needed to drive such a car, since he must not only attend to changing the money, boarding and alighting, but also to the horses and wagons on the tracks. The coachmen fulfill all of these functions with the greatest precision and besides have the inclination, through waving and calling to invite passers-by to ride.

The car body rests on a truck and can be turned on this around a bolt passing through the centers of both. This reverse turning must be done upon arrival at the end of the line and is usually done by the coachmen just before arrival, as the car is still in motion and contains passengers, with great skill, in that they have the horse leave the track, turn around and step shortly backward.

The wheel truck is built of ash and fastened with tie bolts. The cast-iron wheels have a disc with concentric undulations, are 2 ft. in diameter and 3" in tread width, and are wedged onto the axles outside the axle journals. Latter are 2" diameter in the bearings, welded on collars and, between these, 2¼" diameter. The journals rest in cast-iron boxes and carry the truck frame through rubber springs. Lubrication of the boxes is done through a hole which goes through the frame piece and rubber springs and is covered at the top by a leather cap; it can only be carried out when the body has been partially turned. There is an iron frame of thin flat rails fastened with countersunk nails to the wooden truck frame, and a corresponding frame is fitted to the bottom of the car body. The cast-iron brake shoes are fastened in pairs to curved (arc of a circle) brake beams, which are connected together by flat iron bars and hung on the frame. In 1858 the 6th Ave. Co. owned 44 large and 25 small passenger cars.

All cars are painted in bright colors, also decorated with painting, varnished and look very pleasant. A script with large letters gives the route which the car makes, as well as the end stations. The horses carry little bells, whose jingle warns other wagons as well as persons on the track to make way.

The Operations

At the stations the starters are responsible for the change of horses and punctual start of the cars. On weekdays, work begins at dawn and lasts until midnight, and every 3 to 5 minutes a car is sent out. The Sunday rest had been respected on these, as on all American railroads, by closing operations, however they soon had to give in to the demand of the working class, which wished to spend Sunday in the open as well as to the public which

wished to go to the churches, and in New York and Brooklyn the cars run regularly on Sunday. In the latter city the congregation of the Ward Beecher Church protested against the plot of ground set aside by the municipal authority for the building of a new church, as being located too far away from the street on which the railway runs. In Boston on Sunday the cars make only one round morning, midday and evening. In Philadelphia indeed a hard battle about the so-called Desecration of Sunday by the running of the cars is going on; which however, as can be predicted, will end in favor of the working class and the railroad companies.

The speed of operation varies between 4 and 5 miles per hour including stopping. In motion it is between 6 and 8 miles. The sharp curves may only be taken at a walking speed.

The fares are, when the slight value of money in America is taken into consideration, extremely low. For a stretch of 4 English miles an adult pays on average 5 cents (about 25 Prussian Pfennig), a child 3 cents (or 15 pf.) Subscribers buying tickets at the stations, which are only sold in strips of 1 or 2 dollars value, pay usually 2/3 of the single fare.

In Philadelphia, several companies have entered in a connection, and one can buy through tickets from each of them, which also have a low price. For baggage carried by passengers is only to be paid for when it is so voluminous that it occupies the space of a person. Free travel is only granted officers of the railroad with a pass, also firemen and policemen on duty, however the latter must not enter the car interior, but must remain on the platform.

Cars are used by all classes of people, only the coloured people are excluded. On several railroads however these people are allowed to use special cars, usually older, worn-down ones which carry the sign *Coloured People allowed on this car*.

[Editor's note: The original German text quotes this British-style spelling. An October 1854 New York Times article describes this same sign, carried on cars of the 6th Av. RR., using the American-style spelling, and indicates that the company had three such cars on the line. Segregation of streetcars in New York City would gradually disappear, starting with an act of disobedience by Elizabeth Jennings in July, 1854, against the Third Avenue RR. Segregation was neither required nor prohibited under the law. Jennings won a lawsuit and between then and 1873, when the NY State Legislature banned the practice outright, the "rules" were inconsistently applied.]

Driver and car stand under the command of the conductor; he is required to be polite, to help ladies and children board and alight, to care for order and propriety in the car, therefore to allow neither smokers nor drunks. He must collect the fares, call names of principal cross-streets and to give reports of eventual accidents, collisions and the condition of the car. In the following appendix are contained the orders for drivers and conductors of various railroads [*this section was not translated*]

For traffic in winter the railroad companies are required to hold sleighs ready, and when the snowfall is adequate, to carry passengers in these. The companies may not remove snow from the tracks, without previously obtaining permission from the municipal street commission, and this permission will only be granted when no disadvantage for the other road users can ensue.



THANK YOU!

The Shore Line Trolley Museum gratefully acknowledges recent grant support from the following organizations:



20th CENTURY
ELECTRIC RAILWAY FOUNDATION



H. Albert Webb
Memorial Award



Branford Community
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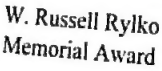
AMHERST
RAILWAY SOCIETY



Mystic Valley Railway Society



NRHS



W. Russell Rylko
Memorial Award

TOP L: Snowfall during the first Easter Bunny weekend capped a winter that just would not relent. (J.Hakner) R: Thank-you sign displayed at our table at the big train show. ABOVE: Dana Bowers explains the contents of a signal case to GWCC students during a frigid January 30 orientation. (N.Nietering) MID L: Cub Scout Pack 455 (Branford) at a talk given by museum membership secretary Carmela Gaetano (2nd from right) and Howie Williams (2nd from left) R: Plow 3152 is out on the line during one of the many February snowstorms. BOT L: On the second week of the training class, snow is still everywhere. Roberto Tillman gives instruction to Eva Bessmer. (K.Rosen) M: Paul Davy and GWCC students clear the path to Barn 1 R: Car 2898 is being towed to the shop by 775 for motor work. (N.Nietering)





from back page
away to the youngest member present, 10-year old Finn Riordan.

Terry and Finn climbed onto 775 along with other guests and President Jeff Hakner gave brief instruction on the operation of the car. Terry applied power and released the air brakes, in that order to prevent rolling backwards down the steep incline, and the car moved forward. To the casual observer this was a minor miracle, since there was no trolley wire in sight overhead and both poles were down. The secret was a heavy-duty "extension cord" several hundred feet long, connecting one "stinger" hanging from the live trolley wire on Narragansett siding to the other hanging from the trolley wheel of 775. After bringing the car into the building and stopping it, Terry turned the handles over to Finn at the other end of the car. Photographers repositioned and the process was repeated. Finn brought the car back out into the sunlight and spotted it perfectly with the boarding steps. Thus a long track work campaign which had begun in frigid January weather had reached its goal, but much work lay ahead.

So far, we had been building the turnouts (other than #1-B on the main line) on the straight side only. Across the new diamond at Narragansett, a sweeping curve to the right and up the ramp, straight through turnout #81-B, a slight curve to the right, straight through #81-85, and then directly into turnout 81-82 of which 82 is the straight side. Now it was time to drop back and start filling in the diverges. At 81-82, the diverging side was spiked to gauge, and an S-curve or "reverse curve" was staked out to connect the turnout to the doorway of 81 track. This was the most complicated bend made thus far, and it took several solid working days to complete it. The track gang also had to pause to allow the contractor to trench across the path of the advancing trackage for the power line. By early December, the 80AS rails outside made it through the doorway and were joined up to the 60AS rails inside the building (which had been laid during the early months of 2014) and a track cart could be moved over the very lightly spiked track. A few more weeks of work, weather permitting, were needed to complete gauging and spiking.

Now 81 track was open for business, but there was one thing missing -- a switch stand! All of these new switches had been clamped in the straight position for the ceremony. A pair of Bethlehem #22 switch stands was brought up the ramp with crane W-3 and one each was placed and spiked down at 81-82 and 81-85. A little bit of adjusting and fussing and both switches were throwing nicely.

A few weeks after the Annual Meeting, we had a visit from several board members and officers of the Illinois Railway Museum, the nation's largest railway museum, which had sent a letter of congratulations for our ceremony. They were favorably impressed with the scope and quality of the buildings. A large delegation from IRM and other railway museums has offered to come in late April to help us build more track.

We were now looking at approximately 340' of high and dry indoor track space ... the first new indoor track space since the 1970s, and the first space inside of a metal-framed building since

the Quonset was erected in 1947! The first car to actually be stored inside Building 8 (775 came back down to Barn 3 the next week -- we needed it for our busy season!) was Connecticut Company Parlor car 500. This certainly would have been the ceremonial first car in, had it been operational, but sadly the car was disabled during the 2011 and 2012 floods (but be sure to read *The 500 Club* on page 2). It was placed at the end of 82 track the week after the Annual Meeting. Cars 850 and Shunter were next since they were not needed for the end of the season (New Orleans 850 was built with no heat). Once 81 track was completed, horsecar 76 was its first tenant (see story pg. 1). Cars 5466 and 1689 followed to clear up track space needed for event staging "down below." Atlanta 948 went on 82 track in January and suddenly the big empty building was starting to look full. All of these are very short-term car moves and the situation will remain very flexible as track construction continues and the ongoing needs of the public program undergo the usual seasonal variations.

We now dropped back to 81-85 turnout. The curved closure rail hadn't even been installed on this one yet. Once that was placed and joined to the heel block and the frog, the curved side of the turnout was spiked to gauge. Stakes were set for the next turnout, 83-85. The 24 switch ties needed were brought up from the pile with the Bobcat loader and then manually placed into exact position and lined up on the centerline. The rail pile is within reach of W-3 as it climbs the ramp and so two rails were selected, picked up and dropped near the heel of the frog of 81-85. These are the "stock rails" of the 83-85 turnout. The points of the switch are about 8' from the previous frog, after a slight right-hand bend. This bend was made and the location of the PS was marked on the straight stock rail. We had been graced by good weather thus far, with a mild January. Daylight was another story, and frequently work was being conducted with a lot of worklights and extension cords. Spiking down of the special riser/slide plates began and then it snowed... a lot. Hard to work on track that one can't see!

Outdoor track work would be suspended for two cold months. The Gateway College internship program began its third year at the trolley museum in late January, with a bumper crop of 22 students! The GWCC students assisted with the unloading of 240 "relay" (previously enjoyed) ties needed to complete the remaining tracks within buildings 8 and 9 as well as 250 new 6x8 ties to be used in the outdoor portions. They picked up where last year's GWCC gang left off in Building 8, extending track 83 to the door and starting work on track 84. Finally in mid-March, work resumed on the 83-85 turnout. The straight stock rail was spiked to line and the stock bend was made in the curved stock rail. As this issue goes to press, completion of this turnout and the connection of track 83 is imminent. The remaining 6 turnouts have been delivered (in kit form) and several truckloads of rail and ties are on their way.

After track 83, the last turnout on the Building 8 ladder will give us access to track 84 and to track 85 between the buildings. Work will then begin on the Building 9 ladder, comprising an additional 5 turnouts.

PG 22 Top L: Letis Excavating Co. trenches under track 82 and future 81 for new electrical service. (J.Hakner) TR: Jeff Hakner and Joe Perrino putting down the 81 track curve. (N.Nietering) Row 2,L: Looking out from 81 track, a light snowfall is just the beginning of a difficult winter. R: Turnout 83-85 starts with tie layout and two stock rails. Row 3,L: Trackwork on a warm January night -- rolling air compressor is spotlighted. R: GWCC students work inside on 83 track, with car 948 on 82 track. (J.Hakner) Bot: GWCC students load tie delivery onto W-3, which heads across the East Haven trestle and towards the Island for distribution. (N.Nietering)

Elevating the Collection

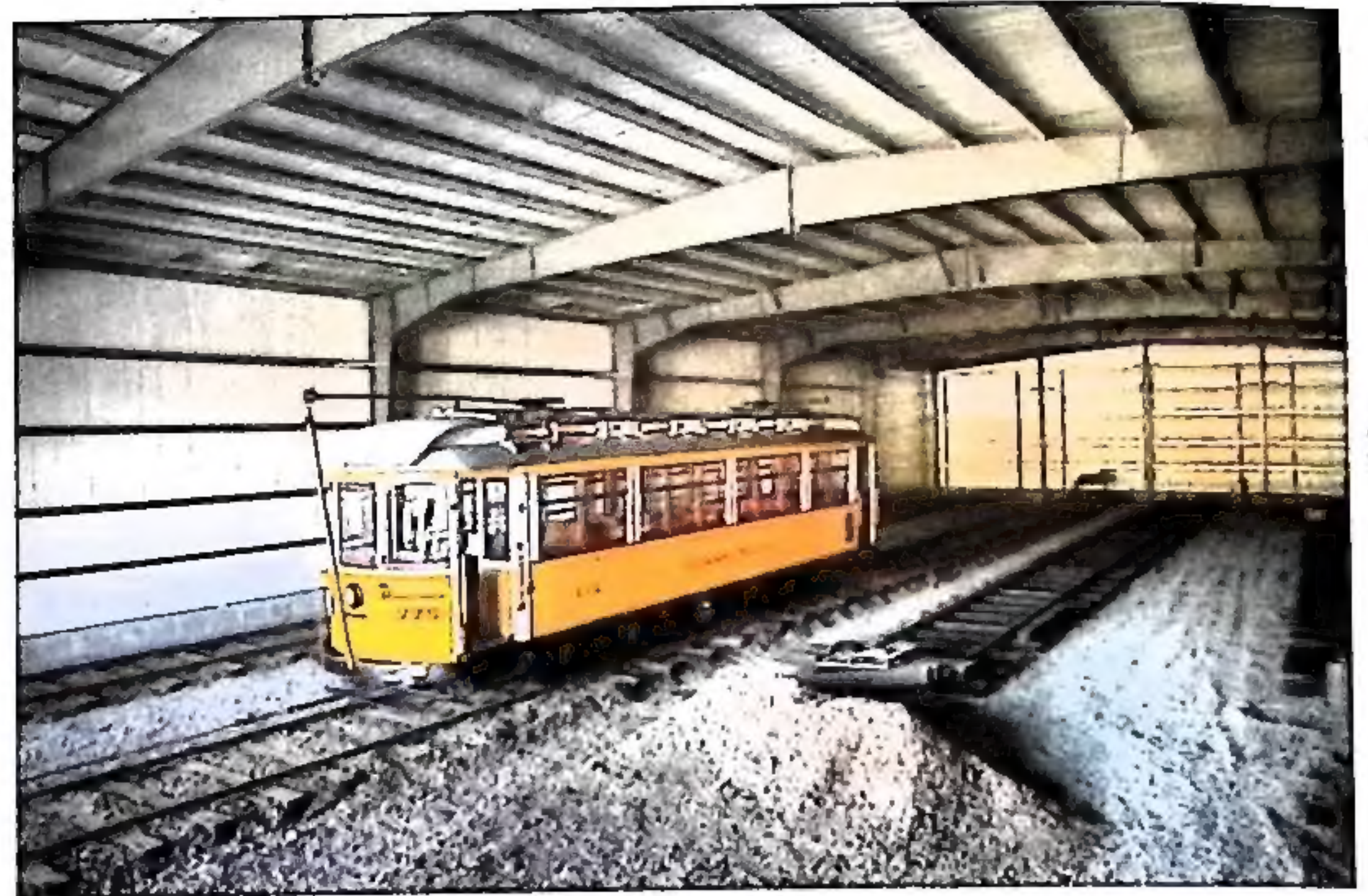
Building 8 Connected!

A major milestone of the Elevating the Collection campaign was celebrated at the Annual Meeting on November 8th, 2014. Connecticut Company 775 made a ceremonial "first run" into the building on Track 82 with about a hundred members and friends of the museum looking on, and several dozen more riding inside.

The car was waiting and ready about fifty feet from the building doors, basking in the warm morning sunshine. At the scheduled time, the ceremony began, with keynote speaker State Senator Len Fasano. So many people had made this moment possible, through their financial donations, through volunteering, or both, that it was impossible to determine fairly who should have the honor of being the first to run a car into the building. So a raffle was conducted to make this a random drawing: First prize to run the car into the building, and second prize to run it back out. Besides, this was only a ceremony. A "dress rehearsal" test run had been made the day before.

Wayne Sanford, our General Manager, took the raffle stubs from the bowl and dumped them into Vice President Ron Parante's hat. The first ticket drawn belonged to Terry Kennedy, who ironically had spent about 24 hours during the previous two weeks volunteering on the track gang to finish the track. The second-prize ticket belonged to long-time member Alan Zelazo, who later that day was standing for election to the Board at the Annual Meeting. Perhaps it was good politics, but more likely just good heartedness, that motivated Alan to give his ticket

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ABOVE: Car 775 sits alone in Building 8, track 82, on November 8, 2014. (Marc Glucksman) BELOW: Tracks 81 and 82 connected. (J.Hakner)



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